

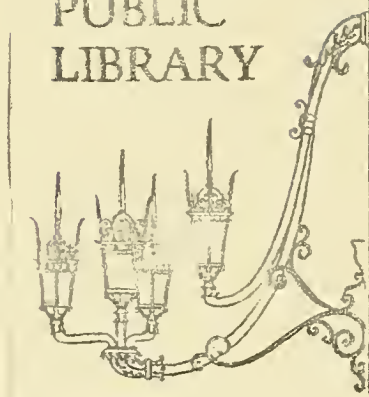
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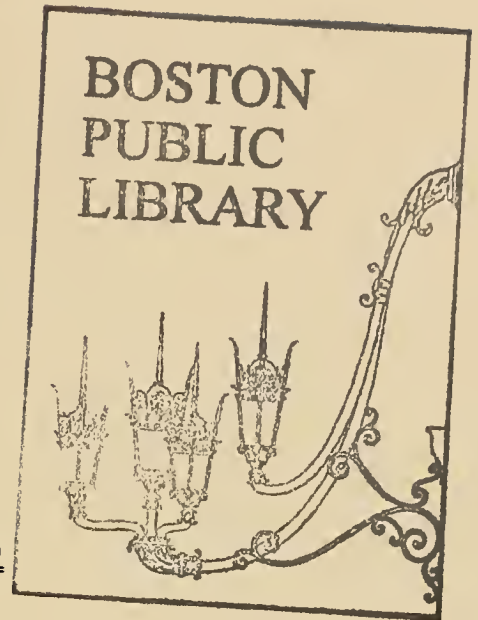
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DRAFT MAY 12, 1989



HARVARD LONGWOOD CAMPUS

MASTER PLAN

MAY 12, 1989



Summary at end of volume.

HARVARD LONGWOOD CAMPUS  
MASTER PLAN

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## HARVARD LONGWOOD CAMPUS

### MASTER PLAN

February 1989

#### Introduction

The Harvard Longwood Campus Master Plan provides an overview of the facilities-related projects planned over the next ten years. The Harvard Longwood Campus (HLC) includes the Harvard Medical School (HMS), Dental School (HSDM) and School of Public Health (HSPH). The focus of proposed development is the east portion of the Harvard Longwood Campus. The plan also provides information on the ownership, use and location of existing facilities. The three Schools have worked closely over the past year to coordinate planning for their respective projects, to address the need for additional parking and to improve the quality of the environment through greater attention to urban design.



The projects proposed for development in this time frame reflect the need for additional space to address changes in the requirements and nature of biomedical research, as well as the need to renovate and upgrade existing spaces. These projects include, over the next ten years, renovation of the Vanderbilt Hall dormitory, renovation and expansion of part of Building D known as the D-2 Wing, construction of the East Quadrangle Research Facility, an underground parking structure, SPH Building II expansion, SPH Building I wrap around and development of a Public Health Quadrangle. Expansion is confined within the existing boundaries of the campus.





1. Harvard's Mission in the Longwood Area

Harvard's primary missions are teaching and the development of new knowledge through research. At the Longwood Campus, these missions are embodied in a broad spectrum of programs in medicine and the biological and social sciences. These programs are regarded as among the best in the world, making Harvard an important national and international resource.

The teaching programs offered by the Schools of Medicine, Public Health and Dentistry are aimed at preparing the next generation of leaders in science, health care and health management. Professional degrees are offered in medicine and dentistry. Masters and doctoral degrees are offered in the biological sciences and in a wide array of important public health specialties, including nutrition, epidemiology and health policy. These teaching programs consistently attract top students from around the world. The Schools also offer continuing education programs for health care and health management professionals.

Harvard's research programs are also distinguished, and cover a wide array of important biological and health-related problems. A substantial portion of the research is aimed at improving the understanding of the basic molecular and cellular



processes that govern health and disease. In particular, the Schools have internationally recognized programs in neurobiology, immunology, virology, gene regulation and expression, and cell and developmental biology. New areas of expertise are being developed in structural biology and molecular pharmacology, and the cancer biology programs are undergoing a major expansion.

Other important research programs are aimed at issues of public health policy, technology assessment, preventive medicine, aging and other strategies to improve the health of populations, particularly among the poor and in developing nations.

Harvard's fulfillment of its teaching and research missions is dependent on the ability to attract and retain the best faculty, students and staff. To do so, Harvard must maintain a functional and attractive physical environment. Many of the buildings on the Longwood Campus are now over 80 years old and are physically and technologically obsolete. For this reason, a major portion of the Schools' capital program is targetted at renovating existing buildings. Some new space is also required. The amount of space available for research has not grown substantially since the early 1970's, despite dramatic changes in the nature and quantity of space required for basic biomedical research. The facilities projects proposed for the Harvard Longwood Campus over the next years will address the





need to renovate existing facilities, as well as provide additional space for research. The accomplishment of these projects is critically linked to Harvard's ability to support its teaching and research missions at the Longwood Campus.



2. Existing Ownership, Land Uses and Building Occupancies

The Harvard Longwood Campus includes the Harvard Schools of Medicine, Dental Medicine and Public Health. The Campus is located in Boston along the Boston-Brookline line bordered by the Fenway, Mission Hill and Brookline neighborhoods. The campus is bounded by Huntington and Longwood Avenues and includes Vanderbilt Hall, the Medical School dormitory, located at the corner of Longwood Avenue and Avenue Louis Pasteur. Exhibits 1 and 2 are site plans of existing conditions for the Harvard Longwood Campus.

Table 1 identifies the Harvard Longwood Campus properties owned by Harvard and utilized by the three Schools. The Exhibit 1 site plan identifies the location of each of the Harvard owned buildings within the Harvard Longwood Campus.



### 3. Description of Proposed Facilities Projects

#### A. Rationale

The Schools of Medicine and Public Health currently envision seven facilities projects over the next ten years. These include the Medical School's renovation of Vanderbilt Hall, renovation and expansion of the D-2 Wing, and construction of the East Quad Research Facility and accessory parking structure; and, the School of Public Health's expansion of SPH Building II, construction of a linkage building as an addition to SPH Building I and development of the Public Health Quadrangle. Exhibits 3 and 4 identify the location of projects planned for Phase I, 1989-1995. Exhibits 5 and 6 identify the location of projects planned for Phase II, 1995-2000.

These projects address Harvard's crucial need to renovate existing facilities and provide additional space to support the Campus' research missions, with particular emphasis on the need to attract the highest quality scientists to the Harvard faculties. The existing Medical School and School of Public Health facilities are shown on Exhibits 1 and 2. The Medical School quadrangle buildings were built in 1906 and are now physically and technologically obsolete. The major mechanical systems in these buildings are seriously inadequate to support increasingly sophisticated laboratory facilities and equipment. Although the School of Public Health Buildings I





and II were built in the sixties, the mechanical systems in these buildings are also in need of major upgrade to support modern research facilities.

Both the Medical School and School of Public Health are in need of additional research space to accommodate their existing faculty, provide space for recruitments that have been delayed due to lack of space, provide specialized laboratory facilities and allow for limited growth in select programs. As a result of changes in biomedical research, particularly the increased use of highly sophisticated equipment and specialized facilities, space requirements for faculty laboratories have doubled in the last ten years. New technologies require dedicated space and personnel which have significantly increased the space required for basic biomedical research. As the space requirements of faculty members have increased, the Schools have been forced to recruit fewer faculty members to replace those faculty members leaving the School. The ability to provide this additional space has become crucial to the Schools' ability to support their respective research missions and attract leading scientists to join their faculties.

Additional research space is also required to provide for the physical grouping of laboratories in related fields of research. The geographic proximity of investigators in related disciplines is an increasingly important consideration. The



presence of many closely related research programs has a synergetic effect leading to especially strong research competence. One such interdisciplinary area of research is virology, which brings together scientists from the Departments of Microbiology and Pathology. This type of interdisciplinary collaboration not only stimulates the research program, but allows for the sharing of specialized equipment and support facilities.

Construction of the East Quad Research Facility, and the renovation and expansion of the D-2 Wing are critical to the Medical School's pursuit of a number of program related objectives in the Departments of Neurobiology, Microbiology and Molecular Genetics, Pathology and Genetics. These objectives, designed to strengthen the School's research programs, include the following:

- o to centrally locate all basic science research on the quadrangle;
- o to facilitate the interaction of investigators in related areas of research, as well as the sharing of specialized equipment and facilities;
- o to initiate delayed recruitments in Departments of Neurobiology, Microbiology and Molecular Genetics and Anatomy;
- o to recruit a new Chairman for the Department of Pathology.





The East Quad Research Facility will house the Medical School's programs in Genetics, Virology and Immunology, and Neurobiology. This grouping of departments will provide for the increased interaction of investigators in Neurobiology and Genetics, as well as investigators in the Department of Microbiology and Molecular Genetics in Building D, adjacent to the new facility. The new facility will also house the Center for Virology and Immunology, an interdisciplinary program bringing together scientists in the Departments of Microbiology and Molecular Genetics and Pathology. The Center will include scientists in virology and immunology that are currently scattered in labs throughout the campus and in the affiliated institutions.

The renovation of Vanderbilt Hall, the Medical School's dormitory, is part of the School's ongoing program to restore the School's physical plant. Similar to the School's quadrangle buildings, Vanderbilt Hall has not undergone a major renovation since its construction in 1926. The major focus of this project will be to improve the quality of student life, as well as to address code deficiencies and upgrade existing mechanical systems. The renovation of Vanderbilt, including the creation of 30 new rooms, acknowledges the increasing demand for student housing given the lack of available and affordable housing in the area surrounding the Medical School.



Construction of the SPH Building I wrap around and SPH Building II expansion represent the cornerstones of the School's 10-year Master Facilities Plan designed to accomplish the following objectives:

- o to increase the amount of research space;
- o to provide more flexible space opportunities;
- o to provide more effective inter-departmental circulation;
- o to improve department adjacencies.

Programmatically, the Building II expansion will permit the School of Public Health to provide more specialized facilities required for virology research and to provide additional space for growth of the Cancer Biology Department. The Building I wrap around addition will be critical to the long-term accomplishment of these objectives. These projects will enable the School of Public Health to alleviate overcrowding of teaching, research and administrative space, as well as satisfy the need for specialized laboratory facilities.

The timing of these projects over the next ten years is crucial in order to keep pace with the research needs of the Schools' faculties and maintain Harvard's position as a premier academic research institution. These projects are also required to restore and improve existing campus facilities.



The projected timing of the proposed projects is as follows:

	<u>Phase I</u>					<u>Phase II</u>						
	<u>'89</u>	<u>'90</u>	<u>'91</u>	<u>'92</u>	<u>'93</u>	<u>'94</u>	<u>'95</u>	<u>'96</u>	<u>'97</u>	<u>'98</u>	<u>'99</u>	<u>'00</u>
Vanderbilt Hall	/	-	-	-	/							
D-2 Wing		/	-	-	-	/						
Phase I Parking		/	-	-	-	/						
EQRF		/	-	-	-	-	-	-	-	-	/	
SPH Bldg II Addn		/	-	-	-	-	/					
SPH Bldg I Wrap							/	-	-	-	-	-
Phase II Parking							/	-	-	-	-	-
SPH Quadrangle							/	-	-	-	-	-



## B. Descriptions of Projects

### Phase I: 1989-95

#### Vanderbilt Hall Renovation

Vanderbilt Hall is located at the corner of Longwood Avenue and Avenue Louis Pasteur, opposite the Medical School's quadrangle and across the street from the School's recently completed Medical Education Center. Vanderbilt Hall serves as the Medical and Dental Schools' student residential hall providing housing for 273 medical students, dental students and graduate students, as well as dining and recreational facilities for the entire campus.

Vanderbilt Hall was originally constructed in 1926. In 1930 a four-story separate residence was added to the Southwest corner of the building, as well as a two-story addition connecting this residence to the South Wing of the building. The building now contains 139,000 gross square feet.

Vanderbilt Hall has not undergone a major renovation since its construction. Several minor renovations have addressed safety features and energy conservation concerns. Many of the mechanical and electrical systems are over 60 years old and in need of total replacement. In many cases these systems are not in compliance with the higher standards of current building





codes. Overall, the interior of the building is in dire need of renovation to make it suitable for student living.

The Medical School's objective in renovating the building will be to maximize the number and quality of dormitory rooms, and to address needs of the Hall's athletic, dining and function facilities. The proposed scope of renovation includes reconfiguration of corner suites on the second, third and fourth floors of the building to address egress deficiencies by improving circulation in these areas of the building. In addition, existing squash courts will be converted into 30 additional dormitory rooms adding approximately 4,000 gsf of space in the west wing.

The timing of this project has been carefully planned to limit loss of the building for student housing to one academic year. Construction is scheduled to begin at the end of the school year in June 1989. Arrangements have been made for interim housing for students for the 1989-90 academic year. Our goal is to re-open the facility for students in the Fall of 1990.

#### Building D-2 Wing Renovation and Expansion

The D-2 Wing of Building D has not undergone a comprehensive renovation since its construction in 1906. The proposed renovation of the D-2 Wing is part of the School's



initiative to renovate the quadrangle buildings. The project will provide for the construction of modern research facilities and support space on all floors, and replacement of all mechanical systems. Windows will also be replaced. The addition of a sixth floor above the D-2 Wing and on the link connecting the D-2 and D-1 Wings for a total of 8,000 gsf will expand existing research laboratory space from 31,000 gsf to 39,000 gsf.

The D-2 Wing renovation and expansion will provide additional research space for the Department of Pathology in support of the recruitment of a new Chairman for the Department.

Construction is scheduled to begin January 1990 with completion anticipated by January 1991. This is a particularly opportune time for renovation of the D-2 Wing given the availability of newly renovated laboratory space in the C-2 Wing for the relocation of faculty out of the D-2 Wing during the project. Furthermore, timing of this project is critical given the need to relocate Pathology faculty back from the C-2 Wing to the D-2 Wing in early 1991, as well as the expected arrival of a new department head in the same time period.

#### East Quadrangle Research Facility

The proposed East Quad Research Facility is a 170,000 gsf



research building to be located on the current parking lot east of Building D. Construction of the facility will require demolition of 30,430 gross square feet of existing space in order to clear the site for the new building.

The new research facility will house three major research programs of the School: Genetics, Virology and Immunology, and Neurobiology. The grouping of these programs in a single facility will increase the integration of their research, an important objective to the mission of the Medical School.

Plans for the East Quadrangle Research Facility were identified as part of a long range planning exercise conducted with the basic science departments in early 1988. Future plans for the Departments of Anatomy and Cellular Biology, Neurobiology, Microbiology and Molecular Genetics and Pathology located in Buildings B and D on the east side of the quadrangle will require incremental space. The amount of space available to these departments has not changed in many years, despite the increased space demands of biomedical research brought on by the accelerated use of highly sophisticated technologies and specialized facilities.

Construction of the East Quad Research Facility would begin in June, 1990 with completion expected by mid-1992.



## Underground Parking Structure Phase I

Construction of the East Quad Research Facility will result in the elimination of existing parking spaces behind Buildings B and D. For this reason, the Medical School plans to construct an underground parking structure simultaneously with construction of the East Quad Research Facility and SPH Building II expansion. This garage with a capacity of approximately 340 cars represents Phase I of a plan being developed with the School of Public Health to construct a larger parking structure. The future garage would occupy the entire area under the existing Longwood Avenue parking lot, the existing Dental School buildings and the new East Quadrangle Research Facility.

The first phase is required to replace parking lost due to Medical School construction, and to meet the needs of the additional faculty and staff who will be brought to the area as a result of the East Quad Research Facility. Construction of an underground parking facility will also improve the quality of the urban environment through the elimination of most of the surface parking surrounding the medical area buildings.

Construction of Phase I of the parking garage will be done in conjunction with the East Quad Research Facility and is scheduled to begin December, 1989. Phase II will not be undertaken until the Dental School buildings have been





demolished. It is planned that the Dental School activities would be accommodated within existing buildings on the campus. With Phase II of the parking structure, Harvard will explore the possibility of locating access to and egress from the parking structure on Huntington Avenue.

### School of Public Health Building II Expansion

The proposed expansion to the SPH Building II research facility is planned as a three-story vertical addition totalling 48,000 gsf. The addition will provide new space for specialized research laboratories for virology research. One of the School's primary objectives in expanding Building II is to support growth of the Cancer Biology Department. In addition to providing Cancer Biology with incremental space, the project will include upgrading 10,000 gsf of the Department's existing laboratory space. Upgrade of Building II mechanical systems will also be accomplished as part of this project.

Construction is scheduled to begin in February 1990 with completion anticipated for February 1991.



Phase II: 1995-2000

School of Public Health Building I Addition

The School of Public Health is planning a seven-story addition to "wrap around" the existing Building I. The addition will provide 112,000 gsf. This building is envisioned as a linkage building, connecting the three School of Public Health buildings. As such, the building addresses the School's desire to improve departmental adjacencies and to provide more effective inter-departmental circulation. The additional space will provide the School with much needed space for teaching, research, and conference facilities. With respect to research space, the School plans to modernize and enlarge existing laboratories as part of this project. The project also includes the upgrading of Building I mechanical systems.

This project is planned for 1995 through 2000.

Public Health Quadrangle and Phase II Parking Structure

The proposed Public Health Quadrangle project will create a second quadrangle on the Harvard Longwood Campus. The proposed quadrangle will open on to Longwood Avenue with the SPH Building I wrap around at the top of the quadrangle. The objective of this project is to provide additional landscaped open space and improved pedestrian circulation. Development of



the Public Health Quadrangle will require elimination of the existing Dental School buildings and the accommodation of the dental programs into existing buildings on campus.

The Public Health Quadrangle project will not be initiated until the other projects included in the ten year planning horizon described in this plan have been completed. Phase II of the underground parking structure will be done in conjunction with the Public Health Quadrangle once the Dental School buildings have been demolished. At this time, development of the quadrangle is projected for the year 2000.

### C. Zoning

All of the Harvard Longwood Campus lies in the H-3 City of Boston zoning district which defines all institutional uses, including laboratory research, education, dormitory and parking to be "conditional uses".

### D. Parking to Support Projects

As described above, construction of the underground parking structure will meet the parking needs of faculty, staff and visitors brought to the Harvard Longwood Campus by the newly constructed facilities described in this plan. Section 6, Impact on Transportation Network and Availability of Parking, contains a more detailed analysis of the existing parking situation in the Longwood Area and the needs created as a



result of the proposed construction.





#### 4. Urban Design Considerations

##### I. Introduction and Existing Conditions:

###### 1. The Harvard Longwood Campus Context and Its Relationship to the City Fabric

As an academic community the Harvard Longwood Campus is fittingly arranged about quadrangles and courtyards, each building simultaneously part of an ensemble of buildings and spaces, and an independent often distinguished edifice. As a campus within the City of Boston, the Harvard Longwood Campus is also a product of the city's street and block structure. The nature of a campus implies a sense of introspection and inward focus; that of a fabric of streets and blocks suggests a broader public network. The character of the Harvard Longwood Campus environment is formed by the overlay of these two somewhat contradictory systems. This overlapping works most beautifully as the public way of Avenue Louis Pasteur gives way to a crescent-shaped space in front of the main campus quadrangle. The environment is least successful when the civic pattern of street and block is ignored or discontinued, or when campus buildings turn away from the city streets which they face.

Along Huntington Avenue, street and campus tend to be separate realms. Along Longwood Avenue a fragile balance



between the qualities of campus and street does exist. The long term goal for both the City of Boston and the various institutions which comprise the Longwood Medical Area should be to achieve a similar sense of balance between campus and street along all of the city streets that these institutions face. Campus buildings fronting onto city streets, even though private domains, should nevertheless engage and contribute to these streets. Of the city this requires more careful maintenance and landscaping of those streets and environments that edge or pass through the campus.

Each new addition to the Harvard Longwood Campus environment - whether new building, building addition, or open space - must enhance both the idea of campus, - defined and sheltered - and that of urban context - open and continuous - in which the institution is a participant. The urban design considerations for the two general phases of development outlined below are based on this primary principle.

## 2. The Nature of Longwood Avenue

Longwood Avenue is the spine of the Longwood Medical Area, of which the Harvard Longwood Campus is part. Longwood Avenue is also the most traditionally urbane of the streets within the Medical Area. It is formed by individual buildings generally orthogonal and block - like in massing, approximately but not literally of the same height, with architectural elaboration



appropriately limited to front facades and boldly detailed entrances facing the street. The range of materials varies from masonry of several colors to stone, and is frequently combined. Window treatment also varies but windows are generally vertically proportioned. While the setbacks from the street vary as well, ornamental fences, landscaped lawns, street trees and street furniture help maintain definition to the public realm. The gaps between buildings are streets or spaces offering views and frequently containing pathways to the interior of the blocks. It is a simple and time-honored system of arranging buildings along an important city street and should be maintained.

Longwood Avenue is also a densely travelled thoroughfare and increased pedestrian amenities are necessary to mitigate the adverse affects of heavy vehicular traffic. Recent improvements have helped and expanding the use of street trees, landscaping, small places to sit or pause, and other street furnishings is strongly encouraged along the entire length of Longwood Avenue.

## II. Phase I Improvements: 1989-1995

This first general phase of Harvard Longwood Campus improvements will include:



- o renovations to Vanderbilt Hall;
- o a New East Quadrangle Research Facility;
- o an underground parking structure;
- o renovation and expansion of D-2;
- o an Addition to the School of Public Health Building No.2;
- o site improvements to the East Quadrangle.

Each of these is a distinct project with its own parameters and schedules.

## 1. Vanderbilt Hall Renovations

The renovations to Vanderbilt Hall do not pose any campus-wide design considerations. The majority of the work is internal. The only new exterior construction consists of two floors or rooms which will replace the largely glazed gymnasium on the north side of the building. This construction will be visible only briefly as one moves along Longwood Avenue from the direction of Brookline Avenue. The massing, proportions and fenestration of these two new floors will extend the character of the existing building and actually make its facades more consistent from front to side.

## 2. The East Quadrangle Research Facility

The East Quad Research Facility's initial urban design responsibilities are toward Building D, to which it will be





attached, and to Longwood Avenue, which will be its address. From Longwood Avenue the East Quad Research Facility will appear as a direct extension of Building D. It must, therefore, respond sympathetically to this building in terms of alignment, massing, height, materials, fenestration, ratio of wall surface to glazing, primary articulations of base, middle and cornice, and general building proportions. There is no formula for such a response and not every characteristic needs to be duplicated. For example, if for reasons of program the EQRF cannot match the height of Building D, then the prominent cornice articulation of Building D might extend to the new building and help it make its height transition. Similarly, the material and window treatment do not need to match Building D precisely, so long as they are similar or complementary. By analogy one might state that the EQRF must share the demeanor of its closest neighbor, and it must have learned from it and its neighbors along Longwood Avenue. A recent addition to the Harvard Campus, the Medical Education Center which adjoins Building E, demonstrates these principles well and should serve as a precedent for the detailed design of the East Quad Research Facility.

The East Quad Research Facility can assert more independence on its East facade where its role will ultimately be to give shape to a future East Quadrangle, and its formal language will determine the character of future buildings surrounding this quadrangle.



### 3. The East Quadrangle Underground Parking Structure

One of the major environmental improvements of Phase I will be the construction of underground parking beneath the EQRF and the adjacent open space. This will remove a majority of the surface parking and enable initial landscaping and pedestrian improvements to this quadrangle.

The location of the access from Longwood Avenue to underground parking and to new service bays will require detailed study of several options. Ramps down to underground parking and servicing areas have precise technical requirements. Care must be taken in their design to insure that the benefits to the East Quadrangle of removing parking and service areas from the ground level are not diminished by the prominence of the means of getting to these areas.

The current environment of the East Quadrangle is for vehicles. Pedestrians proceed with caution and understand that they are the trespassers. Following the construction of the East Quad Research Facility and the underground parking, more of a parity between vehicular and pedestrian use of the quadrangle will be established.

### 4. Building D Renovation

Building D, one of the five original buildings on the main



campus quadrangle, will undergo renovation of its D-2 Wing which faces Longwood Avenue. In addition to an extensive interior fit-up and new mechanical systems, the windows will be replaced and the exterior walls repaired. Part of these improvements entail adding a sixth floor to the D-2 Wing. This will be treated as a penthouse story and detailed to the same level as the penthouse addition to Building C, diagonally across the quadrangle.

#### 5. The Addition to the School of Public Health Building II

A three-story addition to the existing School of Public Health Building II is being planned which will connect to the corresponding floors of the School's Building I. This will greatly improve the internal flexibility of these two existing and interdependent buildings. It will make them more compatible in scale and appearance. This addition will initiate a set of improvements to the facilities of SPH with particular emphasis on creating a more harmonious presence for the School of Public Health.

#### 6. Site Improvements to the East Quadrangle

At present the term "East Quadrangle" refers more to a location than character. The more apt description is "service yard"; an area of loading bays and surface parking formed by the sides or backs of several buildings whose principal



orientations are toward other spaces. Though several minor pedestrian routes lead through this area, it is clear that they are passing through a service area, a "behind-the-scenes" sort of place. As an open space it warrants a re-invention.

The construction of the East Quad Research Facility and the underground parking will represent the first major step in the planned transformation of this area into a quadrangle. The East Quad Research Facility will be the first building with a prominent face towards this space. It will be the occasion for moving much of the surface parking underground. It will enable the streamlining of the service uses on the site. All of which will, in turn, allow the use of more of the ground plane for landscaping and pedestrian amenities.

The design of the East Quadrangle will offer several choices and require careful deliberation. Currently the quadrangle lacks any landscaping and is almost exclusively hard surfaced. The disposition of the access to underground parking and servicing will determine how much of the quadrangle will be paved or planted. It should continue being primarily paved and court-like. Some of its service functions will remain until longer-range alterations to adjoining buildings eliminate the majority of surface servicing needs. However, the palette of paving materials should not be limited to black-top, and areas of planting, seating, walkways and trees must be incorporated.





The entire quadrangle will be better lit, and the lighting scheme will reinforce the spatial qualities of the quadrangle. A well-landscaped pathway along the length of the East Quad Research Facility will connect past the School of Public Health Buildings I and III, and eventually to Huntington Avenue near Brigham Circle.

### III. Phase II Improvements: 1995-2000

The four interdependent steps of the Phase II improvements will be:

- o a new building for the School of Public Health;
- o removal of the present Dental School Buildings;
- o expansion of underground parking and servicing;
- o completion of the improvements to the East Quadrangle.

While these four projects are at this time more conjectural in scope and timing than those of Phase I, they will continue the priority of upgrading the East Quadrangle of the Harvard Longwood Campus and establishing a distinguished environment for the School of Public Health.

#### 1. A New Building for the School of Public Health

A new School of Public Health building at the base of Building I and wrapping around to Kresge will further define



the spatial character of the East Quadrangle. It should approximate the scale and height of the East Quad Research Facility thus giving two sides of the quadrangle a consistent architectural language. It would, therefore, diminish the presence of the much taller SPH Building I on the quadrangle, making it recede more into the background of the open space.

## 2. Removal of the Dental School Buildings

Integral to the design for the new School of Public Health building described above will be the demolition of the Dental School Buildings. This will widen the East Quadrangle, substantially improving its proportions as an open space while allowing the School of Public Health to face more elegantly onto this open space. Dental School activities will be accommodated in existing campus buildings.

## 3. Expansion of Underground Parking and Servicing

The demolition of the Dental School Buildings and relocation of the dental programs will lead to the expansion of the underground parking provided during Phase I. This expansion will allow the removal of the remaining ground level parking and it will enable a second new access way to the parking structure from an existing curb-cut at Huntington Avenue. Such an access point will reduce traffic on Longwood Avenue thus improving the pedestrian environment along this congested street.



#### 4. Completion of Improvements to the East Quadrangle

The above sequence will complete the transformation of the East Quadrangle from a service yard to an important campus open space and proper forecourt for the School of Public Health. The specific character of this new East Quadrangle will evolve incrementally during the two five-year development phases. Issues such as: the ratio of hard surface to landscaping; the nature of the edge along Longwood Avenue (fence with gate, landscaping or future building facing the street?); the extent of minor vehicular use within the quadrangle; the treatment of pedestrian walkways and sitting areas; and the architectural detailing of entries to the buildings which will define the new quadrangle are among the considerations that will emerge over time as a detailed design of the quadrangle proceeds.

#### IV. Summary: Towards A Finer-Grained Network of Buildings, Courtyards, Streets and Pathways

The implementation of the approximately ten-year development program outlined above will greatly improve the Harvard Longwood Campus in a host of ways. It will provide a long awaited modernization and expansion of facilities in basic biomedical research and public health. It will signal the creation of a true East Quadrangle, and a suitable setting for the School of Public Health. It will make the cadence of



building to open space more consistent along Longwood Avenue. It will eliminate most surface parking, limit atgrade servicing, reduce traffic pressure on Longwood Avenue while increasing overall parking capacity. It will allow for a new north-south pedestrian path through the campus. Finally, it will initiate a new look at improving the Huntington Avenue streetscape.





5. Anticipated Environmental Impacts of Construction and Proposed Mitigation Measures

Environmental Impacts

The proposed Harvard Longwood Campus Master Plan development should have no significant environmental impacts.

The following issues are being studied:

- o Storm drainage appears adequate and little if any additional runoff is expected since most project areas are currently largely impervious surfaces.
  
- o Projected sanitary sewage impacts will be minimally affected by the East Quad Research Facility project which will add approximately 25,000 GPD. The remainder of the projects included within the master plan will create an additional small incremental change to the total flow.
  
- o Projected water consumption increases will be affected by the East Quadrangle Research Facility project which will add approximately 25,000 GPD. The remainder of the projects included within the master plan will create an additional small incremental change to the total flow.



- o Space heating and cooling will be provided by the Medical Area Total Energy Plant Steam System, utilizing largely waste heat from electrical generation.
- o Cooling will be provided from chilled water from MATEP.
- o Electrical demand and consumption will increase only proportionately to square footage. All facilities will be designed to comply with or exceed the standard allowed by the State Building Code. Electricity will be provided by MATEP.
- o Hazardous waste will increase only proportionately to research laboratory growth and can be handled by existing disposal systems in accordance with state and federal regulations.
- o No industrial air contaminants will be generated. Chemical and radiological fume hood exhausts will be properly controlled following NIH, NRC, NIOSH and EPA guidelines and regulations.

Detailed information on environmental impacts and abatement measures will be submitted on specific projects consistent with information outlined in Article 31 of the City of Boston Zoning Code (Article 31 does not apply to these projects) to assist the BRA in their review of specific projects.



## Mitigation During Construction

A plan to mitigate potentially disruptive impacts during construction will be developed for each project considered during the ten-year planning horizon covered by the Harvard Longwood Campus Master Plan.

The preliminary plan for the East Quad Research Facility project includes the following:

- o Use spread concrete footings in place of driven piles wherever possible (as determined by geotechnical analysis) to substantially reduce noise, dust and traffic impacts.
  
- o Contain demolition activity (including chutes and dumpsters) inside the lot lines of the property.
  
- o Coordinate construction vehicle traffic with other ongoing projects in the Longwood Medical Area in order to minimize and control activity on Longwood Avenue. MASCO will assist with this activity.
  
- o Provide police details to improve safety and control construction traffic in the area.



- o Provide appropriate fences around the construction site to improve safety and manage noise and dust problems.
  
- o Provide a fire lane through the construction site as required by the BFD.
  
- o Relocate parking spaces lost during construction to an off-site location serviced by shuttle buses. Several options are currently being considered.
  
- o Provide appropriate construction staging areas inside the job site to minimize queing and traffic in the area.
  
- o Provide protection for pedestrians on the Longwood Avenue sidewalk adjacent to the construction site by using fences, gates and police details. Also, any short term sidewalk blockage will be done during periods of minimal pedestrian traffic.





6. Impact on Transportation Network and Availability of Parking

See Appendix 1 for the Transportation Master Plan for the Harvard Longwood Campus prepared by Vanasse Hangen Brustlin, Inc.



## 7. Benefits to the Mission Hill Neighborhood and City of Boston

### Overview

The relationship between the Harvard Longwood Campus Schools and the local community has improved over the last ten years. The Harvard Longwood Campus Schools have worked hard to sponsor and participate in programs and activities that benefit the local Mission Hill neighborhood as part of their renewed commitment to improved relations with the community. As educational institutions, the Harvard Longwood Campus Schools offer a valuable resource to community organizations and programs ranging from the provision of goods and services to youth and senior citizens, to educational outreach to technical support and training for community programs. These activities represent the efforts of faculty, students and administrators throughout the Harvard system. Students view public service as an important component of their education and contribute their time and talent in support of a number of programs. The School of Public Health in particular has provided technical support and training for a number of community health initiatives. Harvard has also provided funding for community development and restoration of neighborhood property.



## Community Programs

Examples of the Harvard Longwood Campus involvement in community programs and services include the following:

o Longwood Medical Area Mission Hill and Fenway Food

Project: The Harvard School of Public Health and Harvard Medical School are proud to participate in this consortium of 14 institutions and five community groups to provide emergency food assistance to the Mission Hill and Fenway neighborhoods. The work of the Project has resulted in the provision of more than 35,000 meals to those in need during the past year. The clients who receive food assistance include the elderly on fixed incomes, individuals and families with insufficient incomes, AFDC recipients whose food stamps do not cover food costs for an entire month, handicapped individuals, people recovering from alcohol or other drug abuse, and the homeless.

- o Mission Hill Dental Outreach Program: This program is a collaborative effort between the Harvard School of Dental Medicine and Children's Hospital. For the last 12 years the program has transported and provided a full range of dental services to the children of the Maurice J. Tobin and the Farragut public schools. Participants are scheduled for dental appointments two mornings per week through the school year. The Mission Hill Dental Outreach Program has



proven essential to the community it serves, and the process of expanding and developing it to reach other populations is underway.

- o Mission Hill After School Program: The Mission Hill After School Program provides an educational and recreational outlet for approximately twenty-five children (ages: 6-12) from the Mission Main public housing development. The program is broken into two sessions: from early October to late December, and from early February to early May. Counselors arrive at Mission Main and pick up the children to take them to classrooms at the HSPH for tutoring in basic English and math skills. On Saturdays, the children are picked up and taken on various field trips throughout the greater Boston area. All of the counselors for the program are Harvard College students. The Harvard School of Public Health has continued to support this program by providing classroom space as well as speakers, without which the program could not operate.
  
- o Mission Possible Summer Program: The Mission Possible Summer Program, supported by the School of Public Health and the Medical and Dental Schools, is a community-based multi-cultural youth program providing educational and recreational support. The program is sponsored by Mission Church and State Representative Kevin Fitzgerald. Harvard has given more than \$5,000 in each of the last two years in





support of this program. President Bok was a special guest of the camp last summer.

- o Action for Community Development Summer Works Program: The Medical School, in partnership with the Action for Boston Community Development, Inc. sponsors a summer works program which provides young adults with an opportunity to earn and learn, and helps participants develop a positive sense of self and healthy work ethic.
- o Holiday Affair to Remember: This annual program is jointly sponsored by the SPH, HMS and the Parker Hill/Fenway Senior Center with 1988 marking the fifth annual program. The evening dinner/dance is attended by approximately 150 elderly guests and has been held at Vanderbilt Hall or Kresge free of charge for the last five years.
- o Project Life: Through a grant from the Boston Foundation, and local boards and organizations, the School of Public Health has had the opportunity to work with residents and others in developing and implementing health related initiatives to address the needs of the community. One such program, Project LIFE, is a health collaboration which includes representatives from the Mission Main and the Mission Extension housing developments and the Parker Hill/Fenway Neighborhoods Service Center, and addresses prenatal health and nutrition concerns. The School provides



training, literature, technical support, and faculty member appearances to help support the program.

- o AIDS Awareness Week: Faculty members from the School of Public Health also participated in a recent forum held on Resources for the Underprivileged and the Mission Hill AIDS Awareness Week. The School provided faculty members as panelists and printed information for outreach.

In addition to these organized efforts to provide outreach to children and youth in the Mission Hill and Fenway-Kenmore neighborhoods, the Medical School and School of Public Health provide a number of ongoing opportunities for local high school students. The School of Public Health sponsors an Internship Program which provides part-time employment to students from English, Madison Park and Boston High Schools during the school year. The School of Public Health also maintains an active association with Boston public schools including tours and visits to faculty labs and other research facilities, arranging internships and mentorships for youth, arranging lectures and exhibitions for classes, and securing speakers for science classes.

As part of Harvard's contribution to the Longwood area community, Harvard students coordinate and participate in a number of ongoing volunteer activities. A partial listing of these activities include:



- o English High Outreach Program - a project of the HMS Class of '89 that provides counselling, life and career resources to students of English High School and Boston Latin School.
  
- o Homeless Project - a student operated program that collects and recycles refundable cans and bottles, used clothes, utensils and practical materials items, and donates the money and goods to charitable organizations such as the Mission Hill Project.
  
- o Urban Health Project - associated with HCHP, it is operated by faculty and HMS students to provide summer jobs and projects in low income, underserved areas of Boston including the Roxbury and Mission Hill neighborhoods.
  
- o "Managing Cultural Differences within the Community" - a conference sponsored by the Harvard Medical Black Health Association in the Winter of 1988. Student members of the Black Health Association also serve as volunteers tutoring area high school students.
  
- o Freedom House - a service that provides support to minorities on issues of bussing, after school programs, and integration, will receive significant volunteer staffing and association with minority medical students through the Office of Recruitment and Retention through 1990.



- o Boriqua Health Pre-Medical Workshop - in conjunction with area college hispanic programs, has tutored other college and university students in pre-medicine, and trained students to volunteer in neighborhood health agencies and hospitals.
  
- o Harvard's participation in the Greater Boston Walk for Hunger has involved over 200 students, faculty and staff who last year gained over \$40,000 in pledges out of over \$2 million raised to help fund area soup kitchens, shelters and food pantries.

### Facilities

The Harvard Longwood Campus Schools also make their facilities available to community programs. The School of Public Health has a policy that allows local community organizations and groups the use of the Kresge facility for meetings, workshops and classrooms at no charge. Several programs and activities have been held including the Symposium of Homelessness and Hunger, and the Youth at Risk Program. The Medical School is now providing classroom space three afternoons a week for the Upward Bound program serving high school students from Mattapan, South End, Dorchester and Chinatown.

In addition, the Longwood Medical Area Security Patrol provides security service for the public from the hours of 4:00





p.m. to 8:00 a.m. Harvard contributes \$37,500 annually to this joint effort to help make the area a safe place to work and live.

Development of the Shattuck Street Mall continues to be a joint project between Harvard Medical School, MASCO, Brigham and Women's Hospital and Children's. It has contributed to the beautification of the area and serves as a pedestrian walk way.

### Community Development

The Roxbury Tenants of Harvard and the University have worked cooperatively for the past 20 years to provide housing and tenant support services to residents of the Mission Hill area. The relationship began in the early 1960's and today provides the following:

- o 775 dwelling units at the mixed-income Mission Park Development (completed in 1975) on Huntington Avenue on long-term land lease to RTH from Harvard
- o 81 units of federally subsidized (Section 8) rehabilitated housing on Francis Street and Fenwood Road (completed in 1981); Harvard gave a \$370,000 non-repayable grant-in-aid to the Tenants Group for restoration of the neighborhood houses; and,
- o 67 units of cooperative housing in the Francis Street area; Harvard provided assistance in the development of the



housing with a \$100,000 grant-in-aid

The Medical School has also equipped two lots on Fenwood Road as a playground for area residents.

Harvard also contributes annually to the City of Boston through participation in the PILOT (payment-in-lieu-of-taxes) program. In 1988 these payments totalled \$3,712,000. The breakdown of these payments is as follows:

MATEP	\$1,869,000
Mission Park	948,000
Solider's Field Park	<u>895,000</u>
 TOTAL	 <u>\$3,712,000</u>

### Employment

As a major Boston employer, the Harvard Longwood Campus Schools provide employment opportunities for over 1,800 local area residents and Boston residents. Because medical research is felt to be one of the fastest growing job markets in the Boston area, the Harvard Longwood Campus will continue to provide excellent employment opportunities to local residents. Staffing representatives conduct outreach efforts, focused within the community, including three local high schools (English High, Boston Latin, and Madison Park High Schools).



Similar efforts are directed through faculty and placement officers at Roxbury Community College, Northeastern University, Simmons College and the University of Massachusetts, Boston. As part of its commitment to affirmative action, issues and skills related to recruitment and hiring of qualified women and minority candidates, particular to enhancing our role in the community, are included in training program for hiring supervisors.



8. Proposed Process for Citizen Participation

Harvard is working within guidelines suggested by the Interim Planning Overlay District to elicit community and BRA input to Harvard's plans. We expect the following sequence for public reviews:

1. Harvard delivers draft Master Plan to Boston Redevelopment Authority. (February 1989)
2. Harvard presents draft Master Plan to joint subcommittee of Mission Hill and Fenway/Kenmore PZACs. (March 1989)
3. Harvard presents draft Master Plan to Mission Hill PZAC. (March 1989)
4. Harvard presents draft Master Plan to Fenway/Kenmore PZAC. (March 1989)
5. Mission Hill and Fenway PZACs comment on Harvard Master Plan. (April 1989)
6. Harvard submits second draft of Master Plan to BRA. (May 1989)
7. Mission Hill and Fenway/Kenmore PZACs forward recommendations to Harvard and BRA. (June 1989)





8. Harvard delivers Master Plan to Longwood Medical Area Joint Subcommittee. (June 1989)
9. Harvard delivers Master Plan to BRA. (July 1989)
10. BRA considers approval of the Master Plan. (August 1989)
11. BRA forwards Master Plan and recommendations to Zoning Commission for consideration. (September 1989)
12. Individual project proposals will follow the existing Zoning Board of Appeal approval process until interim zoning has been established in the Longwood Medical Area. At this point, interim planning permit approvals will be requested from the Zoning Board of Appeal. The Institutional Master Plan is referenced in permit applications and updated when necessary.



TABLE 1 - HARVARD OWNED AND OCCUPIED PROPERTY

<u>Building</u>	<u>Date Completed/ Acquired</u>	<u>Current Use</u>	<u>SF(FAR)</u>	<u># Stories</u>
<u>Medical School:</u>				
160-164 Longwood	1968	Administration	11,900	3/4
180 Longwood	1973	Administration/Research	45,800	3
Education Center	1987	Teaching	138,500	4
641 Huntington	1959	Administration	14,300	4
643 Huntington	1959	Administration	10,400	4
Building A	1906	Administration	56,900	5
Building B	1906	Research/Teaching	103,200	5
Building C	1906	Research/Teaching	98,000	6
Building D	1906	Research/Teaching	88,500	5
Countway Library	1965	Library	145,800	6
CR Facility	1980	Research	12,900	1
200 Longwood		Administration	8,400	2
LHRRB	1969	Research/Teaching	54,000	6
Mudd	1975	Research/Teaching	76,900	6
Vanderbilt Hall	1927	Dormitory	126,500	6
<u>School for Public Health:</u>				
SPH-1	1968	Research	124,000	14
SPH-2	1964	Research	81,900	4
SPH-3	1972	Admin/Teaching	118,000	10
<u>Dental School:</u>				
Main Building	1911	Clinic/Admin	34,700	2
Addition	1971	Clinic/Admin/Research	11,700	2



TABLE 2 - MASTER PLAN

## HARVARD LONGWOOD CAMPUS

<u>TIME PERIOD</u>	<u>AREA OF SITE</u>	<u>TOTAL SF (FAR)</u>	<u>FLOOR AREA RATIO</u>
Existing condition	700,000	1,360,000	1.94
1990-1995	700,000	1,500,000	2.14
1995-2000	700,000	1,600,000	2.29



TABLE 3 - PROPERTY LEASED FOR HMA ACTIVITIES

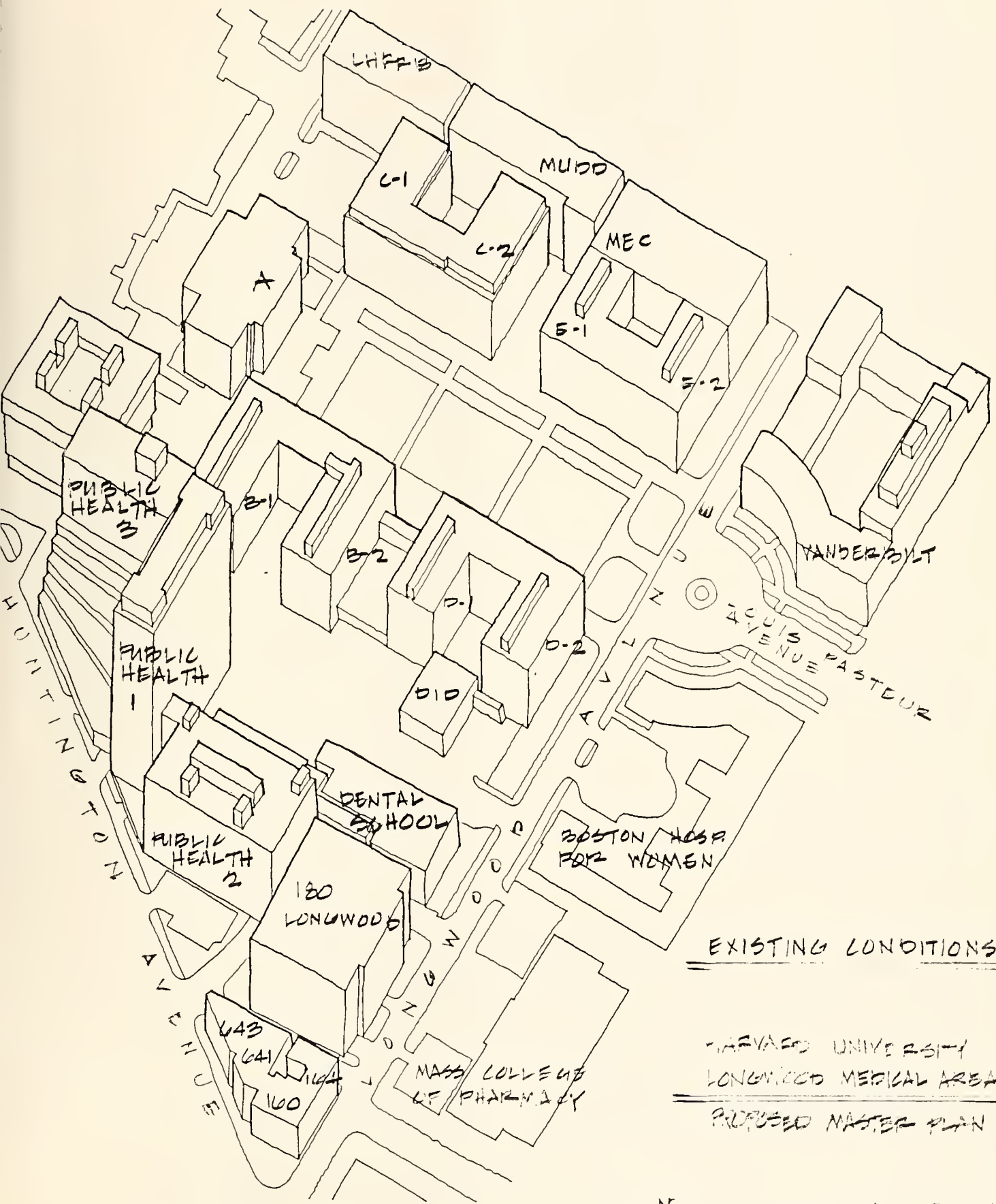
<u>Location</u>	<u>GSF</u>	<u>Current Use</u>
221 Longwood	144	Administration
333 Longwood	2,107	Administration
<b>TOTAL</b>	<u>2,251</u>	







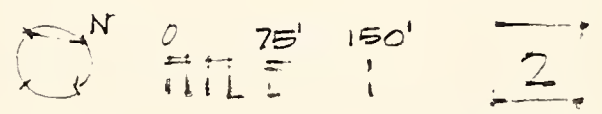




EXISTING CONDITIONS

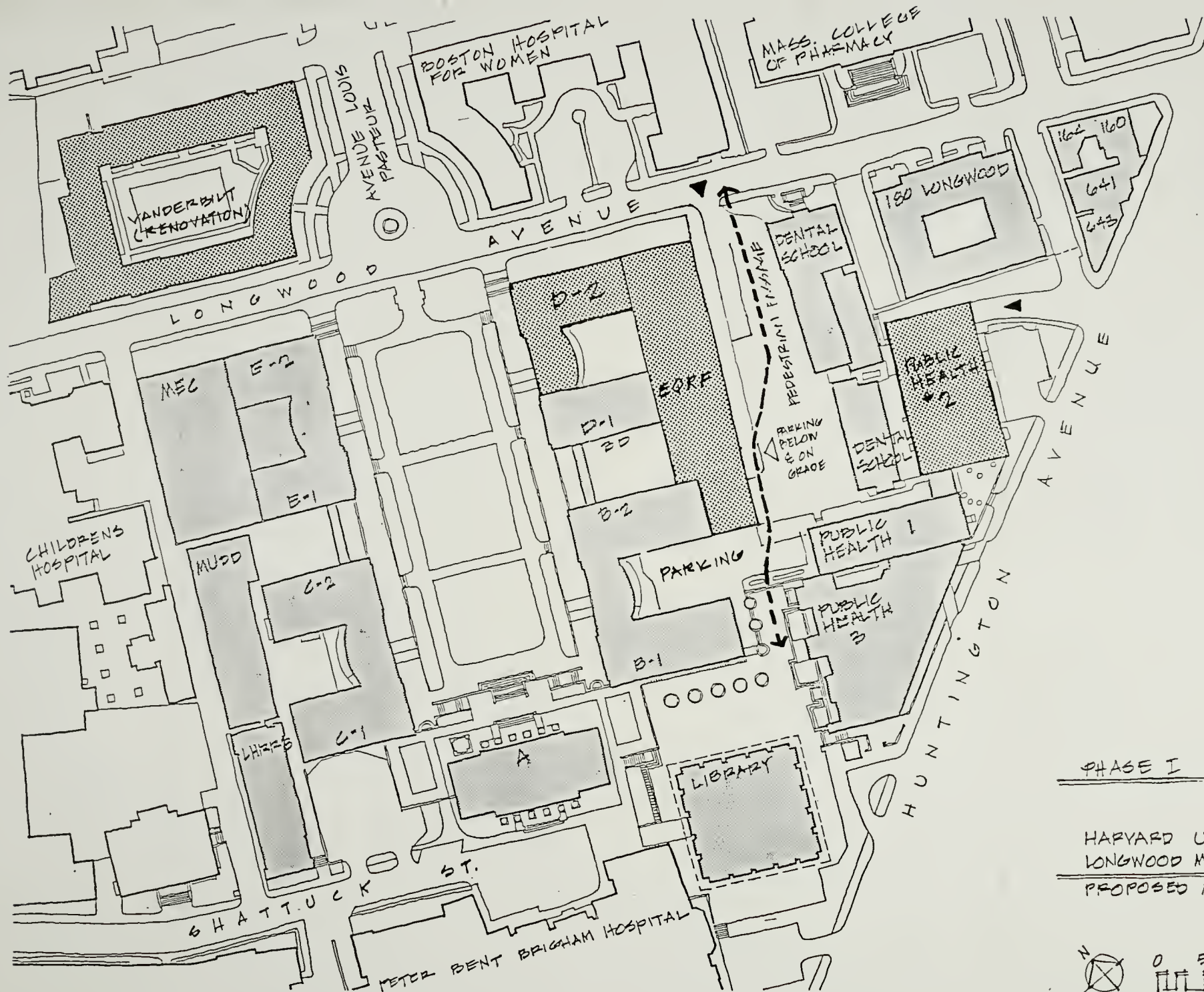
HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA

PROPOSED MASTER PLAN



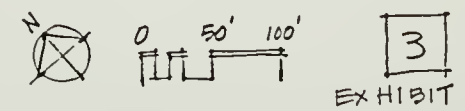






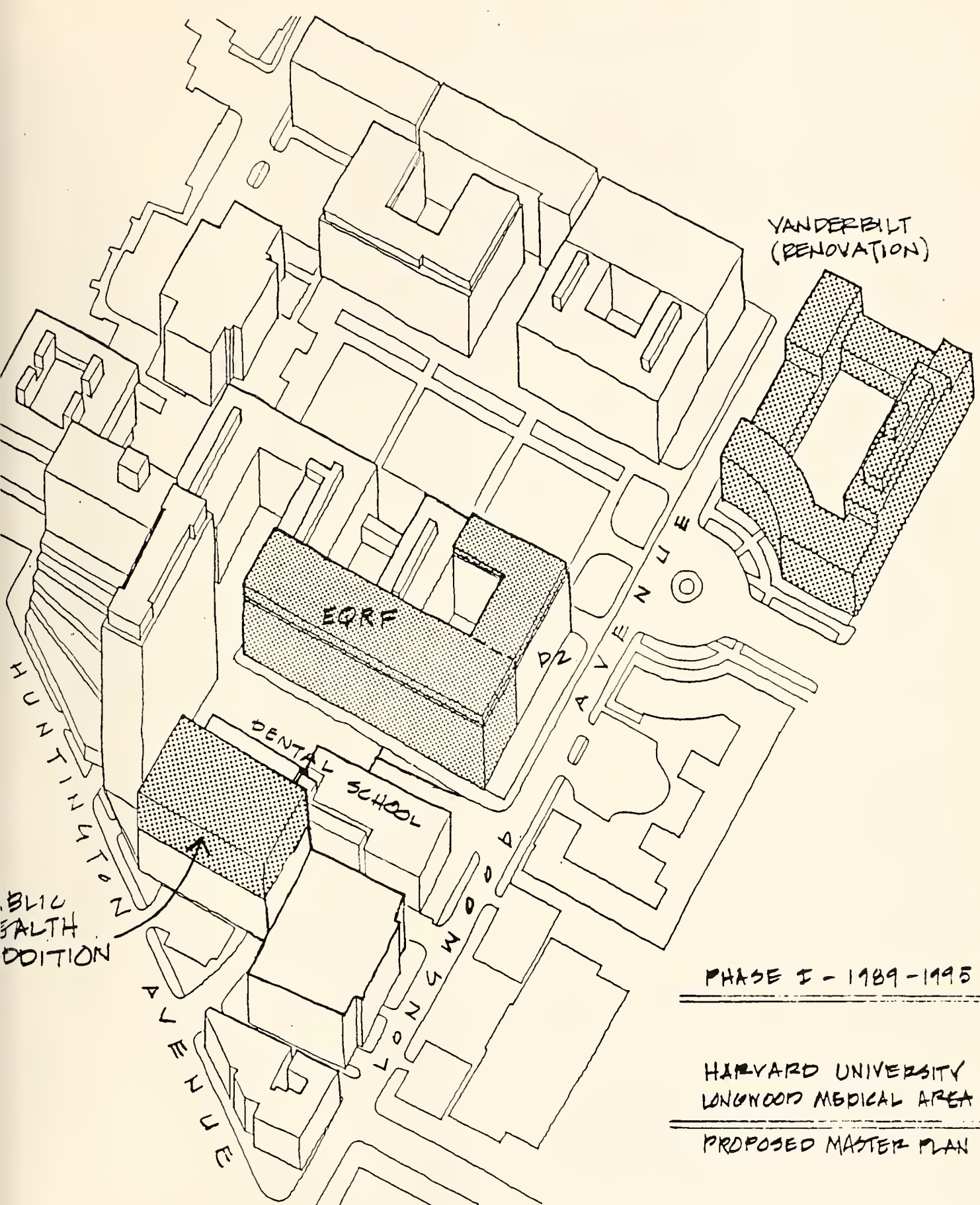
PHASE I 1989-1995

HARVARD UNIVERSITY  
 LONGWOOD MEDICAL AREA  
 PROPOSED MASTER PLAN



EXHIBIT





VANDERBILT  
(RENOVATION)

EQRF

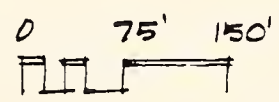
DENTAL  
SCHOOL

PUBLIC  
HEALTH  
ADDITION

PHASE I - 1989-1995

HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA

PROPOSED MASTER PLAN

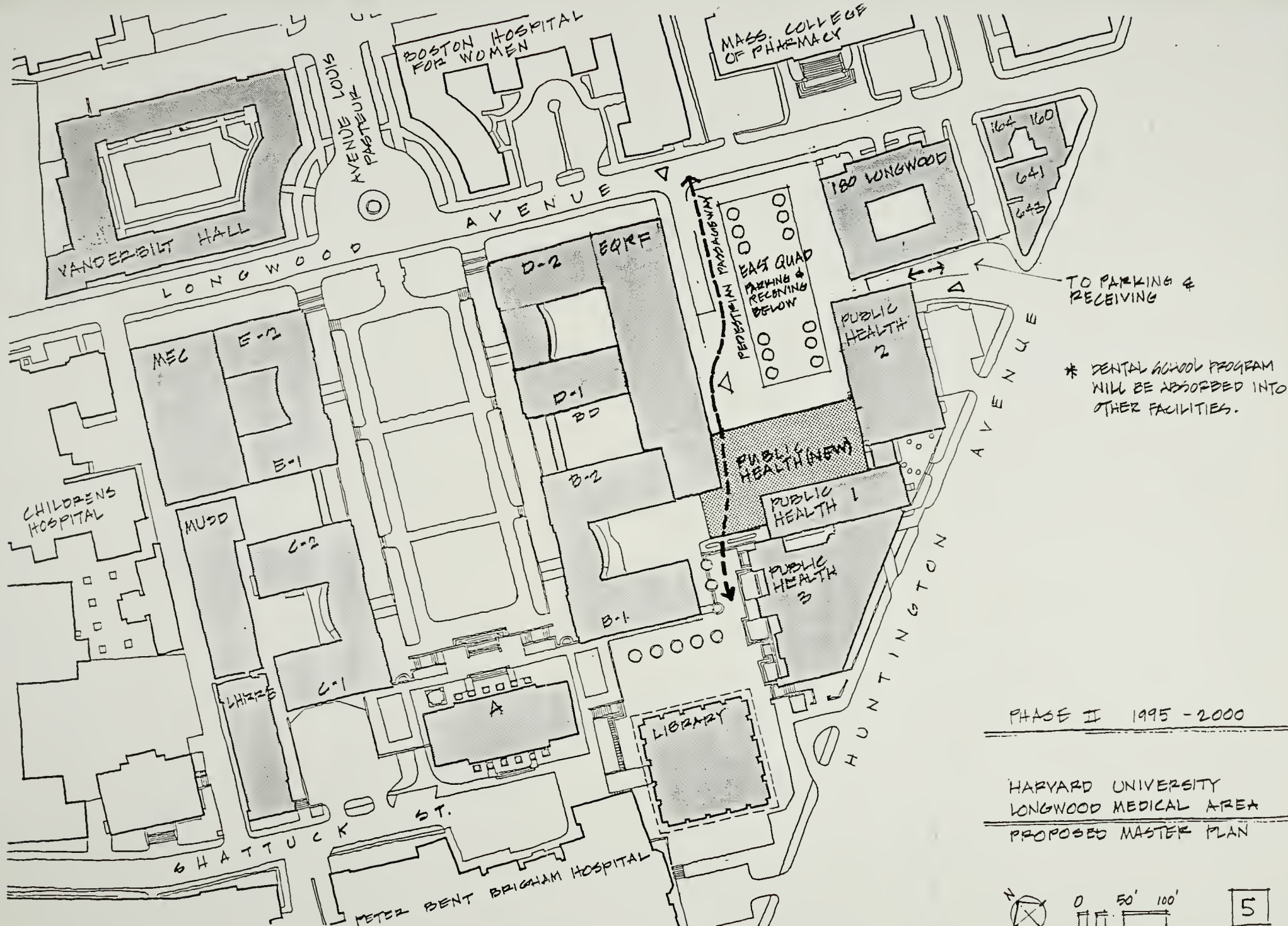


4

EXHIBIT





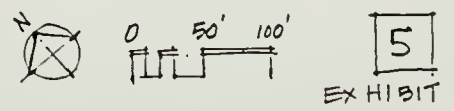


TO PARKING & RECEIVING

\* DENTAL SCHOOL PROGRAM WILL BE ABSORBED INTO OTHER FACILITIES.

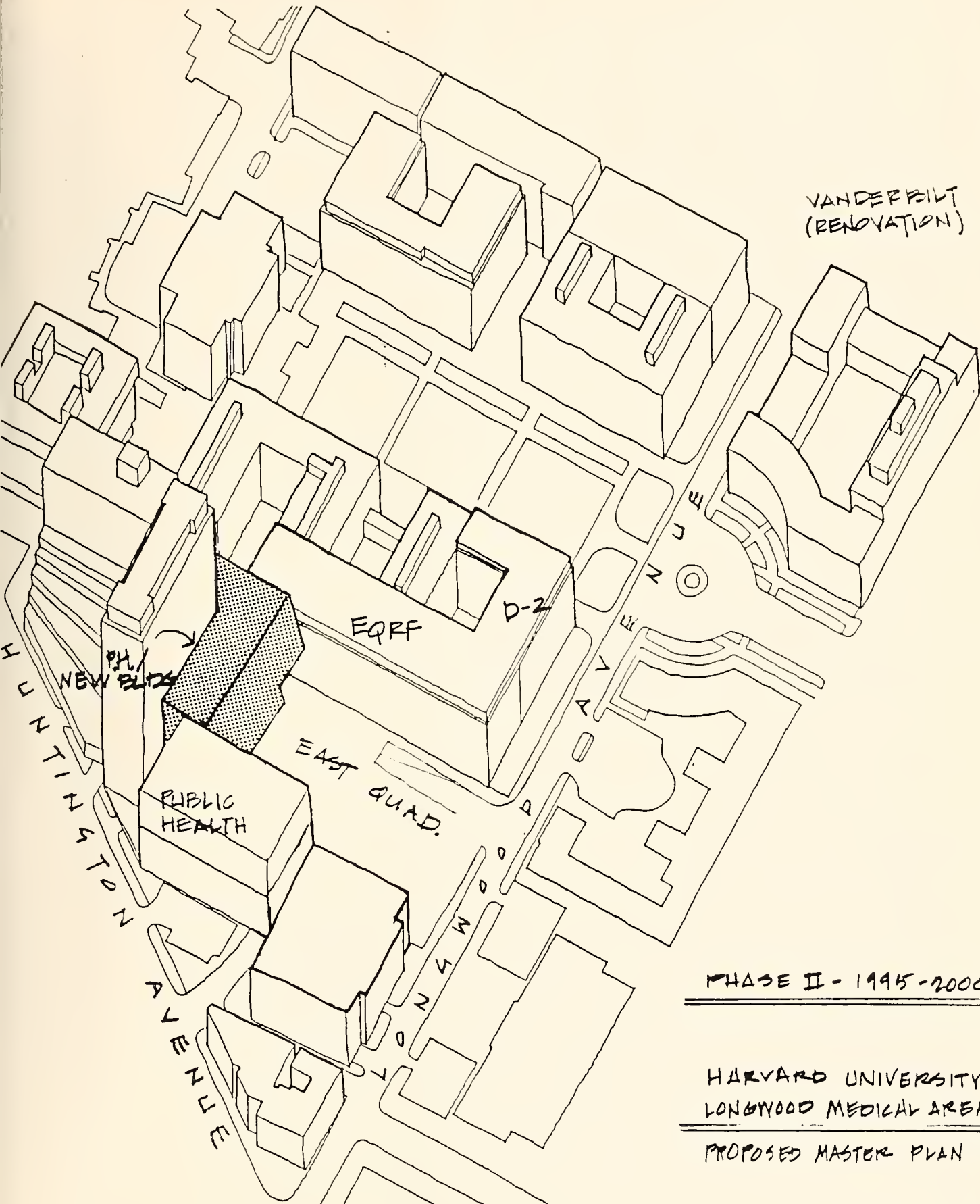
PHASE II 1995 - 2000

HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA  
PROPOSED MASTER PLAN



EXHIBIT





VANDERBILT  
(RENOVATION)

HUNTINGTON  
AVENUE

PH  
NEW BLDG

PUBLIC  
HEALTH

EAST  
QUAD.

EQRF

D-2

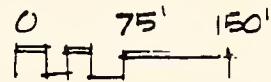
LONGWOOD

JUNYER

PHASE II - 1995-2000

HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA

PROPOSED MASTER PLAN



EXHIBIT



HARVARD LONGWOOD CAMPUS

Boston, Massachusetts

Prepared for Harvard University  
Cambridge, MA

Prepared by Vanasse Hangen Brustlin, Inc.  
Consulting Engineers and Planners  
60 Birmingham Parkway  
Boston, Massachusetts 02135

Partial Draft

May 1989



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## INTRODUCTION

The Harvard Longwood Campus (HLC)<sup>1</sup> is located in the Longwood Medical Area of Boston, as shown in Figures 1 and 2. The primary access to the campus is via Longwood Avenue. Other roadways serving the area include Huntington Avenue, Brookline Avenue, and Avenue Louis Pasteur.

This Transportation Master Plan has been prepared for the HLC in conjunction with its Institutional Master Plan. The Institutional Master Plan has projected the HLC development program over a ten-year period. This program was used to project travel patterns over the same ten-year period.

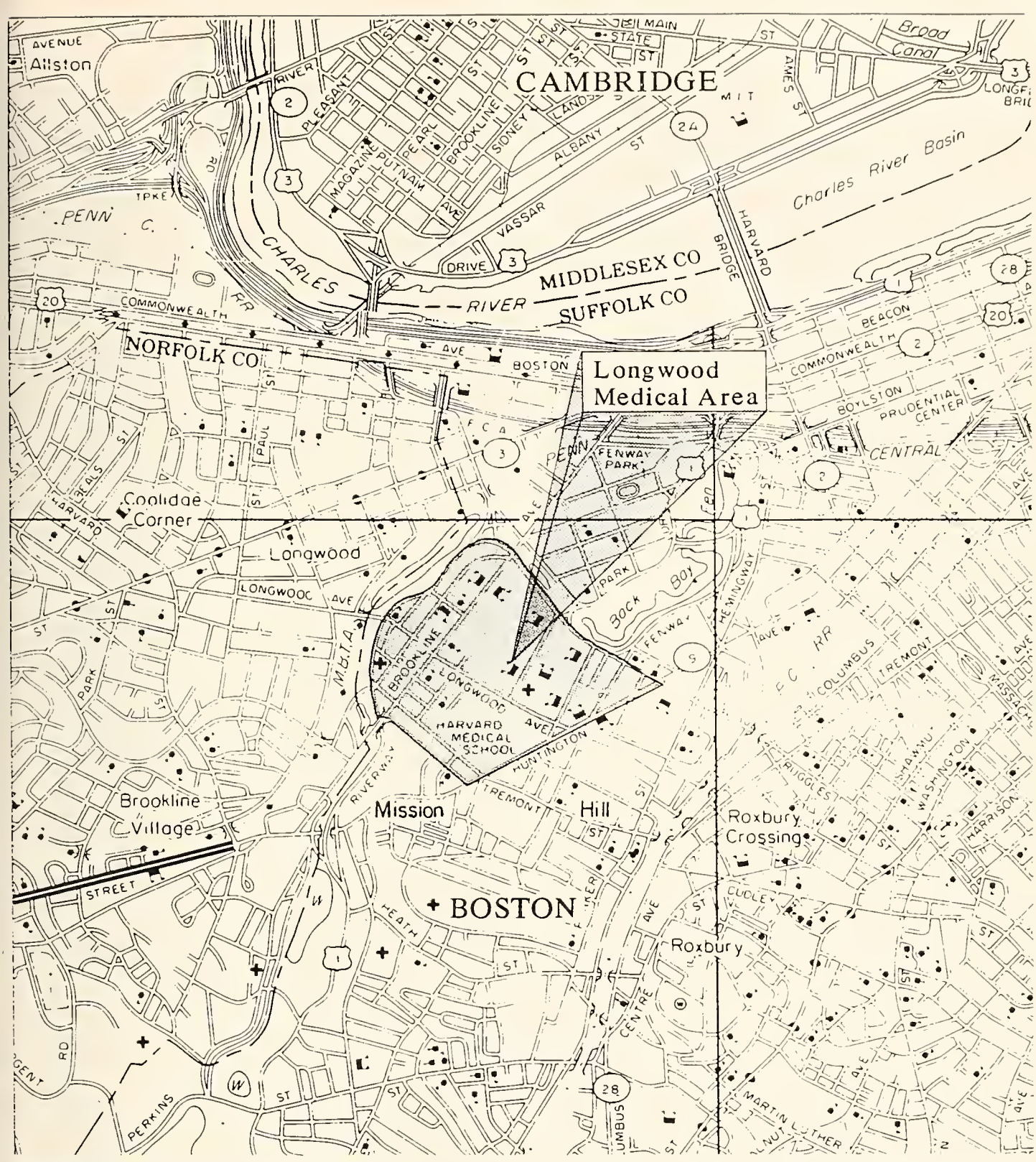
The main issues addressed in this report include:

- Characteristics of user groups (faculty, staff, students, and visitors)
- Travel patterns of these user groups
- Traffic characteristics in the immediate vicinity
- Parking supply, accumulation, and demand
- Characteristics and usage of public transportation
- Pedestrian volumes and circulation
- Impact of projected growth
- Recommended transportation management strategies

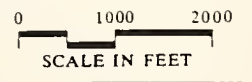
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1 For all references in this report, the term "Harvard Longwood Campus" includes the Harvard Medical School (HMS), Harvard School of Dental Medicine (HSDM), and Harvard School of Public Health (HSPH).






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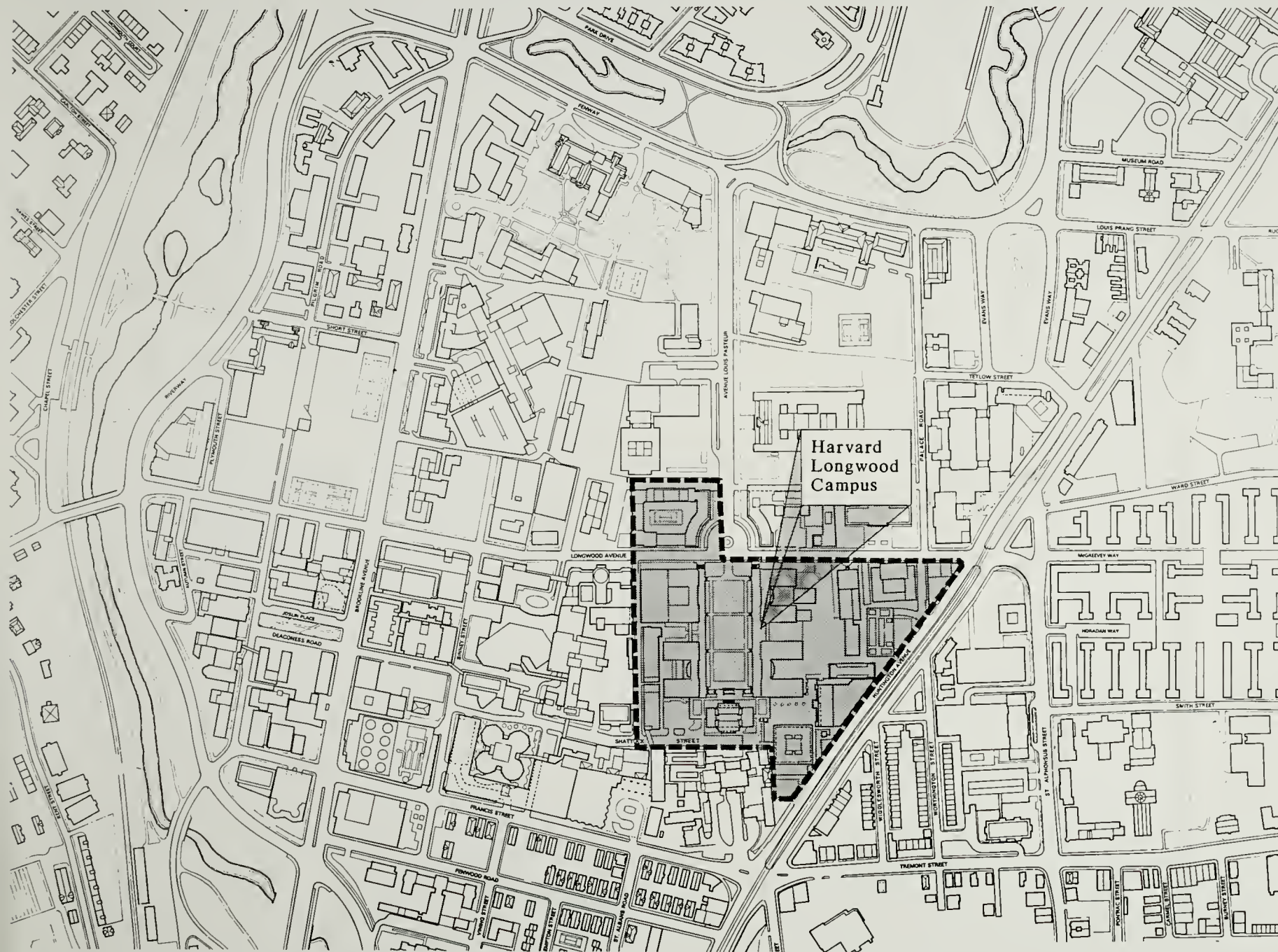
# Longwood Medical Area

 Fig. 1





# Harvard Longwood Campus Location



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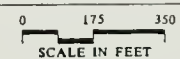


 Fig. 2



The primary mechanism used to identify current travel patterns was the survey of campus users. In addition, traffic, parking, and pedestrian data were collected. Harvard University provided extensive information on staffing and student levels, parking characteristics, and shipping and receiving policies. The analysis results and recommendations are presented in the following sections.

## TRAFFIC CONDITIONS

Current traffic conditions were evaluated for the study area, which included Longwood Avenue from Brookline Avenue to Huntington Avenue. Specifically, the following tasks were conducted:

- Observation of vehicular and pedestrian activity,
- Automatic traffic recorder counts,
- Manual turning movement and classification counts,
- Pedestrian counts, and
- Level of service analysis.

The findings of the evaluation are presented below.

### Roadway Network Characteristics

Primary access to the campus is provided via Longwood Avenue, a two-lane arterial. Other roadways which serve the study area include Huntington Avenue (a four-lane arterial), Brookline Avenue (a four-lane arterial), Avenue Louis Pasteur (a two-lane collector), and Palace Road (a one-lane, one-way local street). Traffic flow along the corridor is dominated by the operation of the signalized intersections. Peak period observations made at the signalized intersections within the study area are presented below:

#### Longwood Avenue and Huntington Avenue

Northbound and southbound drivers along Huntington Avenue generally experience relatively little delay during both peak periods. During the morning peak hour, pedestrians (especially high school students) often cross Huntington Avenue against the light, causing some traffic delays. U-turns are permitted and made in both the northbound and southbound directions. The eastbound and westbound approaches on Longwood Avenue also process traffic with relatively little delay during both peak periods, except that, during the evening peak period, illegal parking on the eastbound approach causes long queues and delays for eastbound traffic.





## Longwood Avenue and Blackfan Street

The northbound approach to this intersection is the main access to Children's Hospital, and the southbound approach is the access to the Blackfan parking facility. The traffic signal is fully actuated, meaning that it responds to traffic and pedestrian needs "on demand." An exclusive pedestrian phase is activated by a pedestrian button on each signal post. The signal is not currently coordinated with the signal at Brookline Avenue. Generally, delays on the side streets are low. Delays on Longwood Avenue at the signal are created by back-ups from the adjacent signal at Brookline Avenue (westbound), or interference from buses stopping for passengers or pedestrians crossing mid-block (eastbound). It was also noted that vehicles park illegally partially on the Longwood Avenue sidewalk, blocking a portion of the 13-foot westbound travel lane.

## Longwood Avenue and Brookline Avenue

This intersection is geometrically constrained, required to process high vehicular volumes, and also required to provide safe access for pedestrians. The traffic signal is semi-actuated with loop detectors on Longwood Avenue. Right-turn-on-red is not permitted with the exception of Longwood Avenue eastbound. In addition, a recently installed sign prohibits left-turns from Brookline Avenue northbound to Longwood Avenue westbound between 4:00 and 6:00 PM. Overall, volumes at this intersection are approaching its capacity during the morning and evening peak hours.

## Existing Traffic Volumes

Morning (7:00 to 9:00) and evening (4:00 to 6:00) peak period traffic turning movement volume counts were conducted in early March, 1989, at the intersections of Longwood Avenue with:

- Brookline Avenue
- Blackfan Street
- Avenue Louis Pasteur
- Huntington Avenue
- Children's Hospital Receiving Driveway
- Brigham and Women's Hospital Driveway (221 Longwood)
- Harvard Longwood Lot Driveway (200 Longwood)
- Massachusetts College of Pharmacy Driveway

At the first four intersections mentioned above, similar traffic counts had been conducted in conjunction with the Longwood Medical Area Transportation Study.<sup>2</sup>



A comparison revealed that traffic volumes generally had not changed by an amount greater than the normal daily fluctuation in volume. In some cases, the volumes in the LMA study were greater. After consideration of these factors, it was decided to use the LMA study data for purposes of comparability to other studies.

The morning and evening peak hour volumes are presented in Figures 3 and 4, respectively.

Automatic traffic recorder (ATR) counts were also conducted in late February and early March, 1989, on Avenue Louis Pasteur and on Longwood Avenue (between Avenue Louis Pasteur and Blackfan Street) to identify traffic patterns through the course of the day. These data are presented graphically in Figure 5. As shown in Figure 5, traffic on Longwood Avenue peaks between 5:00 and 6:00 PM, and traffic on Avenue Louis Pasteur peaks between 7:00 and 8:00 AM.

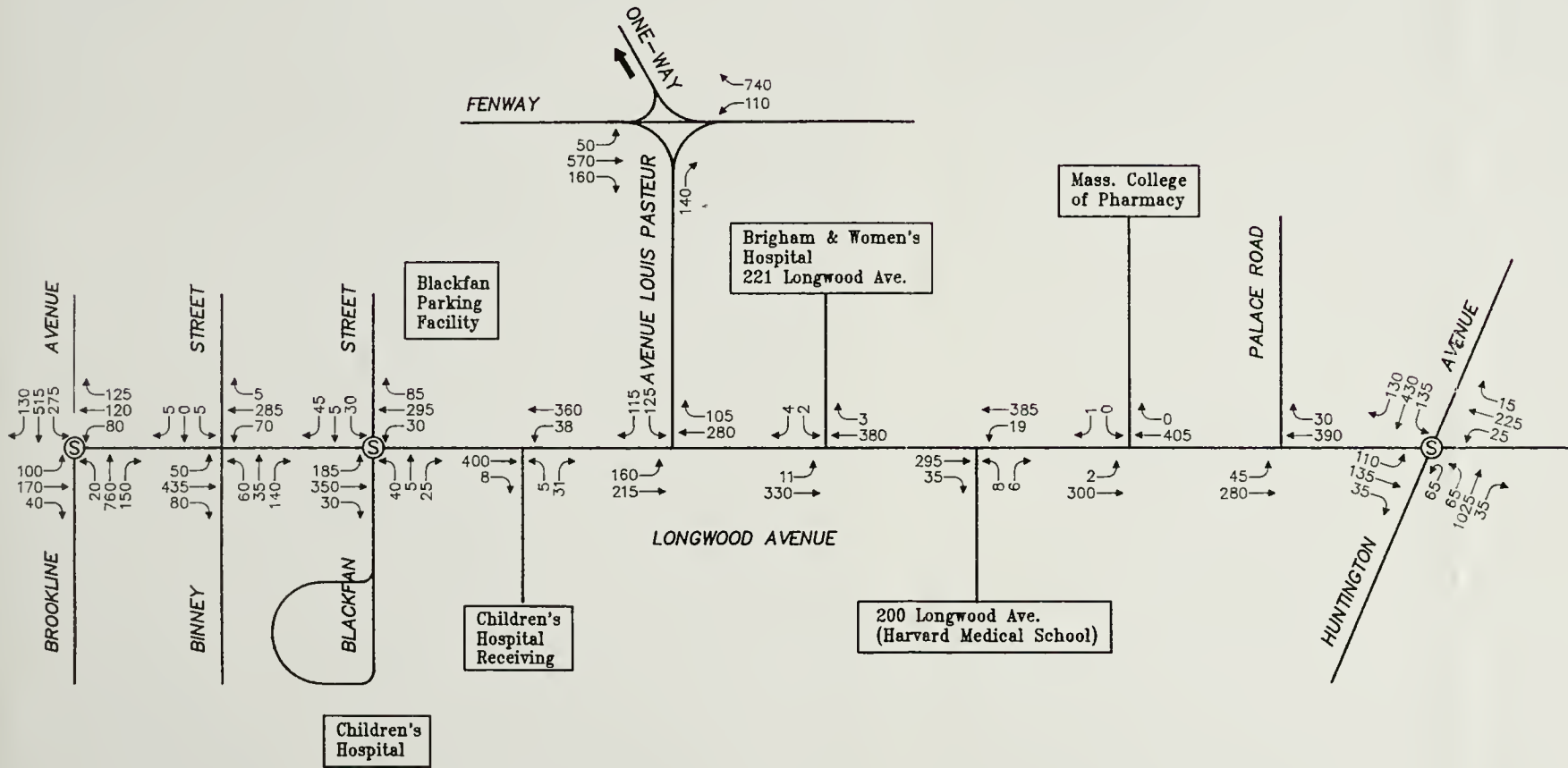
#### Existing Level-of-Service Analysis

The results of level-of-service (LOS) analysis for the three signalized intersections within the study area are presented in Table A. The analysis indicates that delays are generally moderate except at Longwood Avenue and Brookline Avenue. While the Huntington Avenue intersection as a whole operates at LOS C, significant delays occur on the Longwood Avenue eastbound approach to Huntington Avenue. These delays are due to illegal parking. The analysis of existing conditions presented in the table was verified in the field with observations during the morning and evening peak hours.





Existing  
AM Peak Hour  
Traffic Volumes



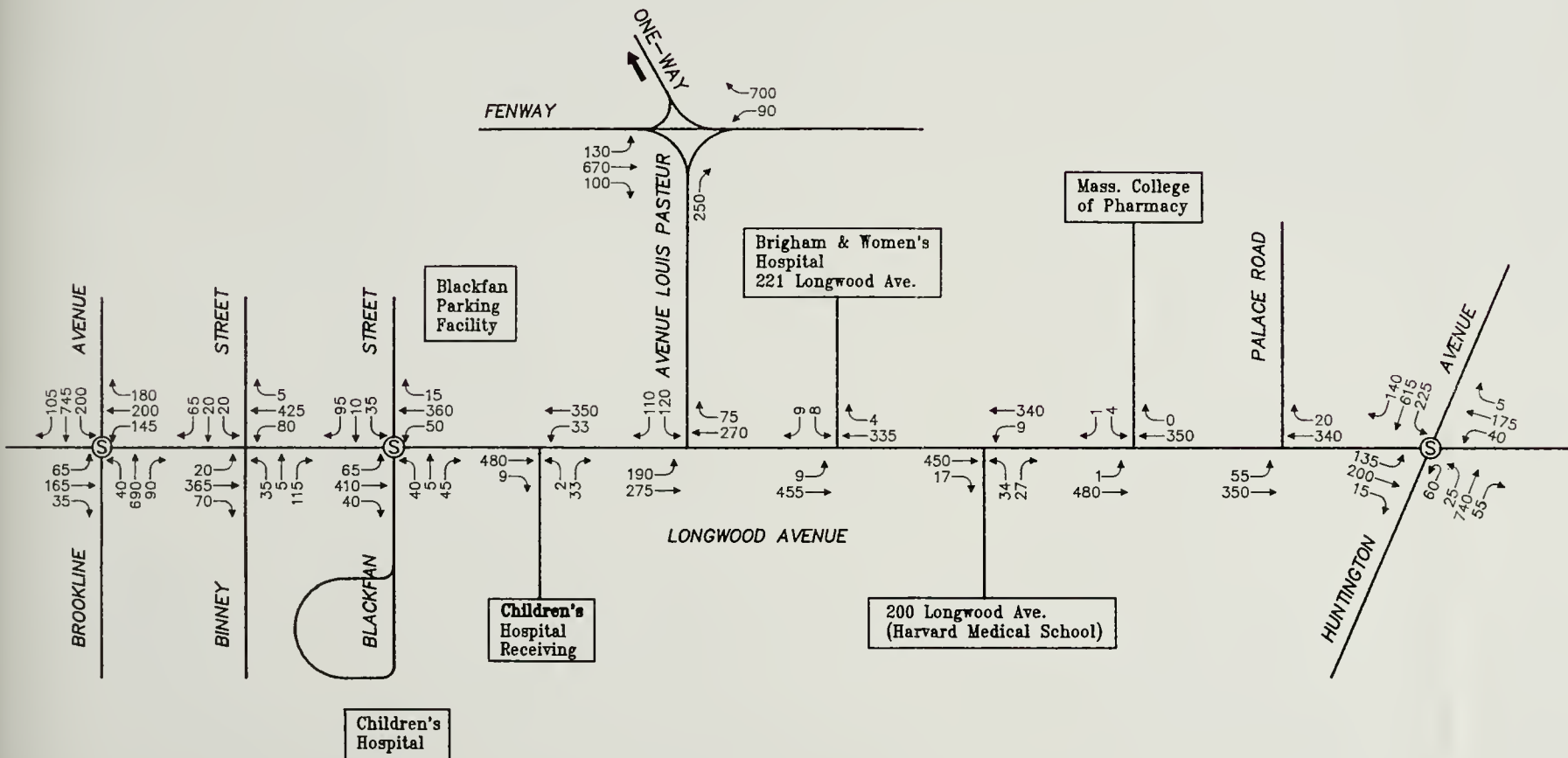
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Not to Scale

⊙ Fig. 3



Existing  
PM Peak Hour  
Traffic Volumes



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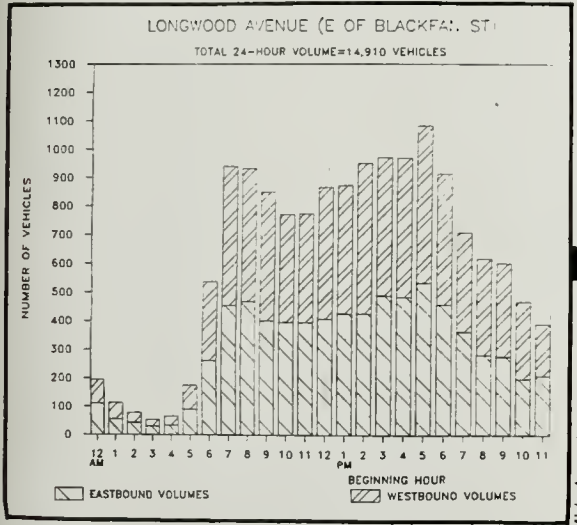
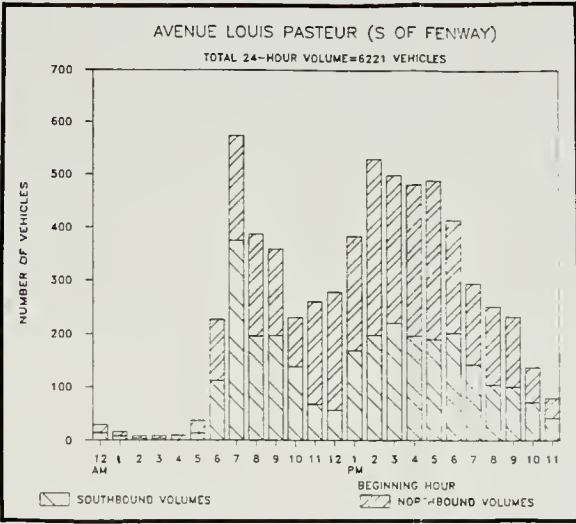
Not to Scale



Fig. 4



# Daily Traffic Patterns



NOTE:  
Automatic traffic recorder counts were conducted during the weeks of February 27, 1989 and March 6, 1989.

LEGEND:  
↔ Vehicles per Day

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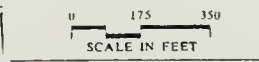


Fig. 5



<u>Intersection</u>	<u>Delay (Seconds)</u>	<u>LOS*</u>	<u>V/C**</u>
<u>Morning Peak Hour</u>			
Longwood Avenue and Brookline Avenue	49	E	0.95
Longwood Avenue and Blackfan Street	15	C	0.80
Longwood Avenue and Huntington Avenue	23	C	0.86
<u>Evening Peak Hour</u>			
Longwood Avenue and Brookline Avenue	50	E	0.85
Longwood Avenue and Blackfan Street	24	C	0.83
Longwood Avenue and Huntington Avenue	15	C	0.79

\* Level of service.

\*\* Volume-to-capacity ratio

## PARKING

### Parking Supply

There are approximately 596 off-street parking spaces available for use by HLC faculty, staff, students, and visitors. The majority of these spaces (517) are reserved for specific individuals.

The off-street spaces can be divided into two categories: (1) 500 on-campus spaces and (2) 96 off-campus spaces. Harvard University directly controls 396 of the 500 on-campus spaces. The parking facility locations are illustrated in Figure 6 and listed in Table B. The parking facilities with their respective number of marked spaces and permits issued are presented in Table C. As shown in Table C, the largest supply of on-campus parking is in the Longwood Lot (185 spaces), while the greatest number of off-campus spaces (56) is in the Kenmore Lot.





# Parking Facility Location



**LEGEND:**

**On-Campus**

- 1. Vanderbilt Lot
- 2. Longwood Lot
- 3. Shattuck Lot
- 4. Denteast
- 5. Palace Lot
- 6. Huntington Lot
- 7. Countway Lot
- 8. MEC Lot
- 9. Blackfan Facility

**Off-Campus**

- 10. Mass. College of Art (Huntington)
- 11. Kenmore Lot
- 12. Temple Israel Lot

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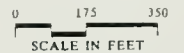


 Fig. 6



Table B

## LOCATION OF PARKING FACILITIES

Facility	Location
<u>On-Campus</u>	
1. Vanderbilt Lot	107 Avenue Louis Pasteur
2. Longwood Lot	200 Longwood Avenue
3. Shattuck Lot	Shattuck Street
4. Denteast Lot	188 Longwood Avenue
5. Palace Lot	180 Longwood Avenue
6. Huntington Lot	665 Huntington Avenue
7. Countway Lot	695 Huntington Avenue
8. MEC Lot	260 Longwood Avenue
9. Blackfan Facility	Longwood Avenue at Blackfan Street
<u>Off-Campus</u>	
10. Mass. College of Art Lot	Huntington Avenue at Vancouver Street
11. Kenmore Lot	Brookline Avenue
12. Temple Israel Lot	Longwood Avenue at Plymouth Street



Table C

## HLC PARKING FACILITY ASSIGNMENT

<u>Facility</u>	<u>Number of Marked Spaces</u>	<u>Number of Permits (Assigned Parkers)</u>
<u>On-Campus</u>		
Vanderbilt Lot	65	2*
Longwood Lot	147	147
- Longwood (Valet)	20	20
- Longwood (Stacks)	18	18
Shattuck Lot	52	52
Denteast	21	20
Palace Lot	14	14
Huntington Lot	30	28
Countway Lot	18	5
MEC Lot	11	11
Blackfan Facility	<u>104</u>	<u>104</u>
Subtotal	500	421
<u>Off-Campus</u>		
Mass. College of Art	10	10
Kenmore Lot	56	56
Temple Israel Lot	<u>30</u>	<u>30</u>
Subtotal	96	96
TOTAL	596	517

\* The remaining sixty-three spaces are used by visiting faculty.

Parking Restrictions and Rates

Generally, HLC parking spaces are assigned to faculty, staff, and students on an annual fee basis. The specific restrictions and rates which apply are presented below.



## Restrictions

Reserved spaces for faculty, staff, and students are assigned for a 12-month period. The spaces are reserved for the individuals assigned between 7:00 AM and 5:00 PM Monday through Friday. From 5:00 PM until 7:00 AM the following morning and on weekends, the on-campus lots are open to the public free of charge. (This excludes the Blackfan Facility and the off-campus lots.)

The Vanderbilt Lot has 63 unassigned (to individuals) spaces as presented previously. These 63 spaces are, however, assigned to the three schools (HMS, HSDM, and HSPH) for use by their teaching and visiting faculty. These spaces are generally reserved on a nine-month basis and assigned according to the class schedule of the individuals involved.

Parking for contractors and servicemen is provided as available at the Longwood and Vanderbilt Lots. Generally, visitors to the campus having meetings with staff or faculty are provided a free parking space. Other visitors to the campus must park in facilities provided for the general public.

## Rates

As mentioned above, the parking spaces are generally assigned and paid for on an annual basis. Table D presents the parking rate schedule for all facilities as they apply to faculty and staff. As shown, all on-campus lots are priced at \$845.00 per space per year. On average, off-campus spaces are priced about 30 percent lower than on-campus spaces.





Table D

## CURRENT HLC FACULTY AND STAFF PARKING RATE SCHEDULE

---

<u>Facility</u>	<u>Assigned Parkers</u>	<u>Yearly Price</u>
<u>On-Campus</u>		
Vanderbilt Lot	2	\$845.00
Longwood Lot	184	\$845.00
Shattuck Lot	52	\$845.00
Denteast Lot	20	\$845.00
Palace Lot	14	\$845.00
Huntington Lot	28	\$845.00
Countway Lot	4	\$845.00
MEC Lot	11	\$845.00
Blackfan Facility	<u>67</u>	<u>\$845.00</u>
Subtotal Assigned Parkers	383	
Weighted Average Price (On-Campus)		\$845.00
<u>Off-Campus</u>		
Mass. College of Art Lot	10	\$642.00
Kenmore Lot	56	\$514.00
Temple Israel Lot	<u>30</u>	<u>\$642.00</u>
Subtotal Assigned Parkers	96	
Weighted Average Price (Off-Campus)		\$567.33
Total Assigned Parkers	479	
Weighted Average Price for Faculty and Staff		\$789.35

---

Parking is generally not provided to students, but a few students are assigned to the Blackfan Facility and the Kenmore Lot. One handicapped student space is provided in the Longwood Lot. As shown in Table E, students who have parking permits pay \$568.47 annually, on average.



Table E

## CURRENT HLC STUDENT PARKING RATE SCHEDULE

<u>Facility</u>	<u>Assigned Parkers</u>	<u>Yearly Price</u>
<u>On-Campus</u>		
Longwood Lot	<u>1</u>	<u>\$845.00</u>
<u>Off-Campus</u>		
Blackfan Facility	37	\$561.00
Kenmore Lot	<u>0</u>	<u>\$514.00</u>
Subtotal Assigned Parkers	37	
Weighted Average Price (Off-Campus)		\$561.00
Total Student Parkers	38	
Weighted Average Price for Students		\$568.47

The price of parking for visiting faculty in the Vanderbilt Lot is pro-rated to the school for which they teach based upon the level of usage by each school.

Parking charges for contractors and servicemen are as follows:

- \$5.00 for less than four hours
- \$10.00 for four hours or more

#### Parking Utilization

The Longwood Lot is the largest parking facility (185 spaces) at the Longwood Campus and therefore was the focus of the utilization study. On Thursday, February 23, 1989, a 12-hour count was conducted at the access to the facility to determine its usage and the time of maximum parking demand for that day. Table F summarizes the results of that count. As shown in the table, 20 percent of all vehicles observed entering the facility entered between 8:00 and 9:00 AM, while 20 percent of all vehicles observed exiting the lot exited between 5:00 and 6:00 PM. It is interesting to note that 79 vehicles remained in the lot after 7:00 PM. These vehicles could belong to staff working late or others taking advantage of the availability of free parking.



Table F

VEHICLE ACCUMULATION - LONGWOOD LOT  
THURSDAY, FEBRUARY 23, 1989 :

<u>Time Period</u>	<u>Entering</u>	<u>Exiting</u>	<u>Accumulation</u>
at 7:00 AM			5
7:00 - 8:00	32	11	26
8:00 - 9:00	82	14	94
9:00 - 10:00	63	28	129
10:00 - 11:00	37	17	149
11:00 - 12:00 Noon	20	15	154
12:00 - 1:00 PM	13	25	142
2:00 - 3:00	14	19	136
3:00 - 4:00	8	15	129
4:00 - 5:00	31	46	114
5:00 - 6:00	35	64	85
6:00 - 7:00	<u>41</u>	<u>47</u>	79
at 7:00 PM			79
TOTAL VEHICLES	401	327	

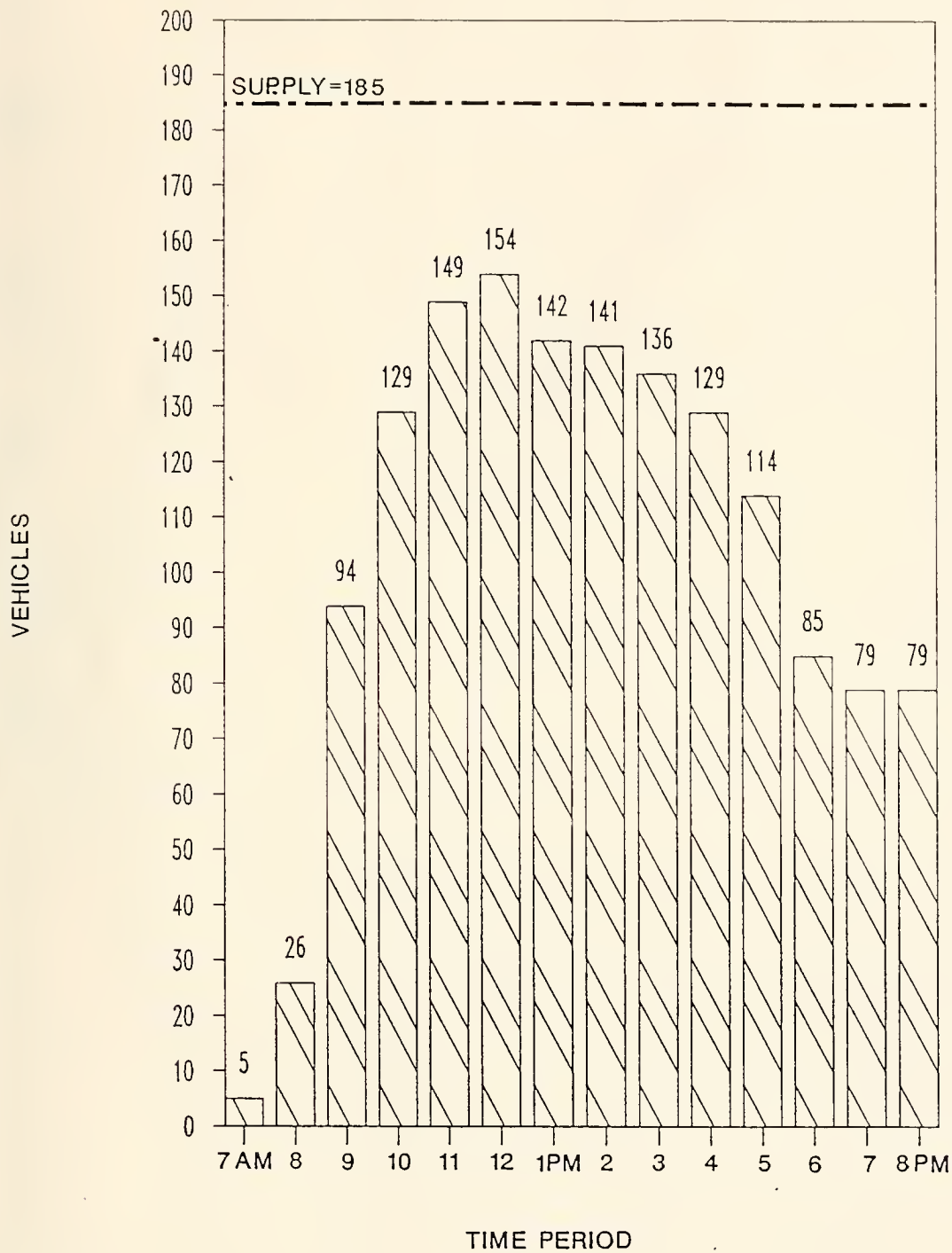
The peak parking accumulation (154 vehicles) occurs at 12:00 noon. Figure 7 presents a graph of the hourly parking accumulation from 7:00 AM to 7:00 PM on the day of the count. This figure shows that accumulation in the lot increases until 10:00 AM. It remains generally level from 10:00 AM until 4:00 PM, when it begins to decline. Since this facility serves commuting staff and faculty, this parking pattern is no surprise. A comparison of the peak demand (154 vehicles) with the supply (185 vehicles) indicates that the lot was not fully utilized on this particular day. It is important to note, however, that each space in the lot is reserved for a particular individual between 7:00 AM and 5:00 PM weekdays unless the parking office is notified that the individual will not use the space.

### PUBLIC TRANSPORTATION

The Longwood Medical Area (LMA) is served by two branches of the MBTA Green Line and four regular MBTA bus routes. In addition, Route M2 is operated by the Medical Area Service Corporation (MASCO) and fully underwritten by Harvard University. The MBTA and MASCO routes are presented in Figure 8.

Each branch of the Green Line connects a part of the LMA with the Back Bay and downtown Boston, where connections to other subway lines can be made. The Highland Branch, or Riverside (D) Line, serving Longwood Station at the western fringe of the LMA, runs west through Brookline and Newton to Riverside





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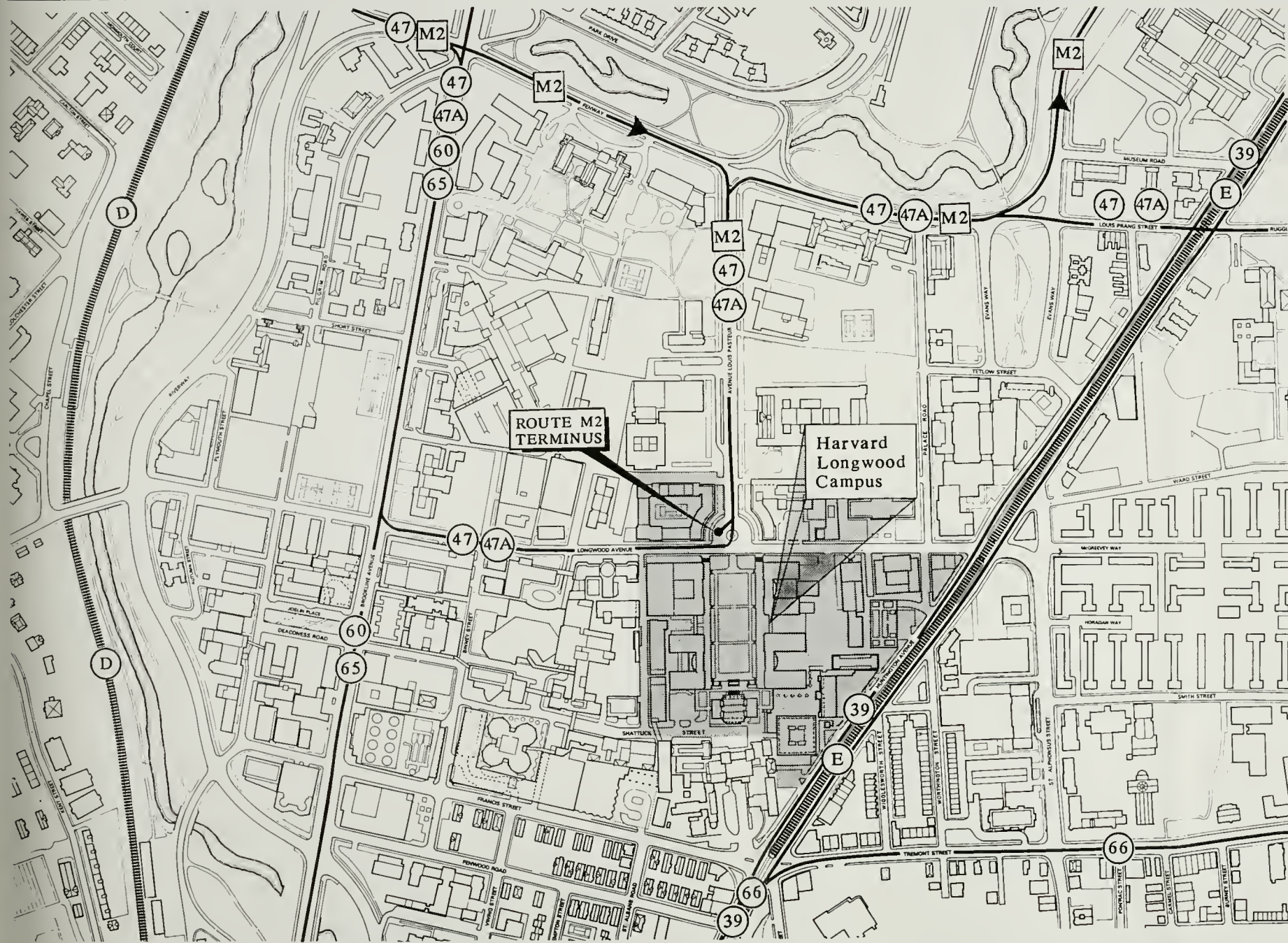
Vehicle Accumulation  
 Longwood Avenue Lot  
 Thursday,  
 February 23, 1989

Fig. 7





# Transit Routes



### LEGEND:

- MBTA Route
- MASCO Route
- ▨ Light Rail Line
- D Riverside-Downtown
- E Brigham Circle-Downtown
- 39 Copley Square-Forest Hills
- 47 Central Square-Andrew Square
- 47A Kenmore Square-Boston city Hospital
- 60 Kenmore Square-Chestnut Hill
- 65 Kenmore Square-Brighton Center
- 66 Allston-Dudley Square
- M2 Cambridge-LMA

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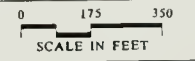


 Fig. 8



Station (near the junction of Routes I-90 and I-95), where park-and-ride facilities are provided. The Arborway (E) Line, serving Huntington Avenue along the eastern border of the LMA, runs south through Roxbury and Jamaica Plain to Forest Hills Station, where passengers may transfer to buses serving Dedham, West Roxbury, Hyde Park and Roslindale. Both branches operate seven days a week, from 5:30 AM until after midnight. Service is scheduled at least every 10 minutes during most of those hours.

Due to ongoing road construction on Huntington Avenue in the LMA, Arborway streetcar service south of Brigham Circle has been suspended, and a temporary bus route (#39) runs along the trolley route between Forest Hills Station in Jamaica Plain and Copley Square in the Back Bay. Buses provide the same service hours as the Green Line streetcars did, but with higher frequencies. Buses are scheduled at least every five minutes each weekday from 6:30 AM to 11:00 PM. In addition, light rail vehicles (LRVs) operate in the Huntington Avenue median between Brigham Circle in the LMA and downtown Boston.

Bus Routes 47, 47A, and 66 travel east to Dudley Square and other points in Roxbury. Route 66 serves the LMA chiefly at Brigham Circle, while Routes 47 and 47A provide more comprehensive coverage of the LMA, serving much of Longwood and Brookline Avenues. Route 66 also runs northwest through Brookline to Allston, while Route 47 travels north through Cambridgeport to Central Square. Route 47A terminates at Kenmore Square. At Ruggles Station, Routes 47 and 47A connect with the Orange Line and many Roxbury and Dorchester bus routes. Route 47 extends eastward to meet the Red Line at Andrew Square.

MBTA Routes 60 and 65 parallel each other as both run the full length of Brookline Avenue between Kenmore Square and Washington Street in Brookline Village. From there, Route 60 detours through a residential section before following Route 9 to Chestnut Hill in Newton. Route 65 turns to the northwest, following Washington Street through Brookline to Brighton Center.





BRA

336

Summary

## THE HARVARD LONGWOOD CAMPUS MASTER PLAN

### SUMMARY

The Harvard Longwood Campus Master Plan provides an overview of the facilities-related projects planned over the next ten years. The Harvard Longwood Campus (HLC) includes the Harvard Medical School (HMS), Dental School (HSDM) and School of Public Health (HSPH). The focus of proposed development is the east portion of the Harvard Longwood Campus, referred to as the East Quadrangle. The Master Plan focuses on those areas and facilities which will require attention, both for the Campus and its context. The plan includes studies and proposed mitigation measures for questions of environmental impact, transportation networks, and parking issues that the changes address. It also outlines benefits to the Mission Hill neighborhood and how these improvements will contribute to the community. The Master Plan raises vital institutional issues, and, because of the urban context into which the Medical Campus is set, also addresses unique planning considerations.

Harvard has long been dedicated to excellence in research and teaching. Presently, the facilities exist in technologically obsolete buildings and insufficient space. In order to support the schools' research and educational requirements, a number of improvements need to occur. The Medical School and School of Public Health envision a two phase, ten year program with seven facilities slated for improvements, renovations and additions. These alterations will not only improve the quality of life for student and faculty; they will also assist in maintaining Harvard's reputation for excellence, and contribute to the urban fabric and campus environment.

The seven projects itemized below are in two 2-5 year phases. Following that is a list of urban design considerations which will govern the planning and design of these improvements.

### **Programmatic Considerations**

#### PHASE I: 1989 - 1995

1. Vanderbilt Hall Renovations. Primarily interior renovations.
2. Building D-2 Upgrading and Expansion. 8,000 square feet of updated laboratory space will be added on as a sixth floor, and will also link the D-2 wing and D-1 wing together.
3. East Quadrangle Research Facility. This facility is a very important addition to the program. At 170,000 gross square feet, this new building will house three major research programs which require interdisciplinary flexibility: Genetics, Virology and Immunology, and Neurology. The building will be located on the site of the present parking lot east of Building D, and will require demolition of 21,500 square feet of existing space. To compensate for the loss of parking (and increasing numbers of faculty and staff), underground parking is proposed in both Phase I and Phase II. Construction will begin in June 1990, and be completed mid-1992.
4. Phase I Underground Parking will at least double the present parking capacity.
5. School of Public Health Building II Expansion and Upgrading. A three-story vertical addition totalling 48,000 s.f. with 10,000 s.f. of renovation. The addition will provide specialized research laboratories for virology research, and support the growth of the Cancer Biology Department.



## PHASE II: 1995-2000

1. School of Public Health Building I Addition. This addition will wrap around the existing building and provide 112,000 square feet of upgraded facilities. It will also link all three School of Public Health buildings, providing accessibility to all departments.
2. East Quadrangle will become the second quadrangle on the Longwood Campus, providing much needed open space. It is scheduled for the end of the Master Plan sequence (once other facilities are complete), and phased in conjunction with the second phase of underground parking.

## **Urban Design Considerations**

As an academic community, the Harvard Longwood Campus is arranged around quadrangles and courtyards. Each building is simultaneously part of an ensemble of buildings and spaces and an independent, often distinguished edifice. The nature of the campus signifies introspection and inward focus. Alternately, urban fabric is composed of a network of streets, building edges and public realms, structured in blocks. A potentially interesting quality of the Medical School's campus is its immersion in the city, creating an overlap of systems. This overlap is sometimes successful, often not. Each new addition must enhance both the idea of campus--defined and sheltered--and that of urban context--open and continuous. Presently, Longwood Avenue partially exhibits this fragile balance between campus and context, and must continue to be developed carefully. Huntington Avenue still suffers from a separation of these realms, and needs to take cues from the successful areas on Longwood.

## PHASE I: 1989-1995

Below is a summary of how the proposed programmatic improvements to the Longwood Campus will impact the urban fabric.

1. Vanderbilt Hall. No great impact: Primarily interior renovation.
2. New East Quad Research Facility: Will read as an extension to Building D, therefore respond sympathetically to it. The East facade will face onto the future Quadrangle, and can begin to form the eventual character of the new Quad and its surrounding buildings.
3. Underground Parking: This offers a vast environmental improvement over the present on grade, unsightly parking facilities.
4. Building D-2 Expansion and Renovation: No significant impact.
5. School of Public Health Building no. 2 Addition: The three-story addition will be compatible in scale and appearance to building 1. It will attempt to create a more harmonious presence for the School of Public Health.
6. East Quadrangle Site Improvements: This space needs to be reconsidered for pedestrians. It can become a true public open space or court with appropriate landscaping, facade improvements and pathways.

## PHASE II: 1995-2000

1. SPH Building will further define the spatial character of the East Quad.
2. Existing Dental School Buildings: To be removed, which widens the East Quad.
3. Underground Parking expanded and service access moved to Huntington Avenue: This will considerably ease the traffic on Longwood Avenue.
4. East Quadrangle Improvements Completed: Final improvements will evolve in response to prior improvements and subsequent needs.







## **VANDERBILT HALL RENOVATIONS**

### **Background**

Vanderbilt Hall, located at the intersection of Longwood Avenue and Avenue Louis Pasteur, is the dormitory for Harvard Medical School students. The structure, built in 1927, features a curved facade echoed by the similar design of the former Boston Lying-In Hospital, and thus creates a unique and handsome urban setting. The abutters are Children's Hospital, Boston English High School, and Brigham and Women's Hospital.

### **Scope of the Project**

The project includes the replacement of most building systems, compliance with building, safety, and access codes, and renovation of most interior spaces. The exterior of the building had been previously renovated and there will be no exterior alterations visible from the streets. Interior renovation will create an additional 30 dormitory rooms.

### **Schedule**

Construction commenced in June, 1989 and completion is expected in August, 1990. The building will be unoccupied and temporary housing arrangements have been made for the students.

### **Approvals**

All approvals and permits for this project have been received, including community, Boston Redevelopment Authority, Zoning Board of Appeal, and Inspection Services Department.

Attach: Schedule

33:95





## **EAST QUADRANGLE RESEARCH FACILITY**

### **Background**

The Harvard Medical School proposes to build a new research laboratory to consolidate several Harvard affiliated research groups. This new project will provide new, state-of-the-art biomedical research laboratories so that the researchers can better concentrate and coordinate their efforts to find cures to major diseases.

### **Scope**

The project includes a new laboratory building of approximately 170,000 gross square feet, including related animal facilities together with an underground parking facility for approximately 270 cars.

### **Schedule**

Construction is scheduled to start December, 1989 and to be completed mid-summer 1992.

### **Approvals**

To obtain a building permit later this year, the Zoning Board of Appeal public hearing will take place in November, following community, Boston Redevelopment Authority (BRA), and Transportation Department review. A Project Notification Form, Draft Project Impact Report and the second draft of the Harvard Longwood Master Plan have been submitted to the BRA. The project will generate a Development Impact Project payment of approximately \$400,000 dollars.

Attach: Schedule

33:96





## BUILDING D-2 RENOVATION

### Background

Building D, one of the five original buildings on the main campus quadrangle, will undergo renovation of its D-2 wing which faces Longwood Avenue. The renovation is necessary due to the age of the building and the need to provide space for a new chairman of the Pathology Department.

### Scope

In addition to interior alterations and new mechanical systems, the windows will be replaced and the exterior walls repaired. Part of these improvements entail adding a sixth floor to the D-2 wing. This will be treated as a penthouse story and detailed to same level as the penthouse addition to Building C, diagonally across the quadrangle.

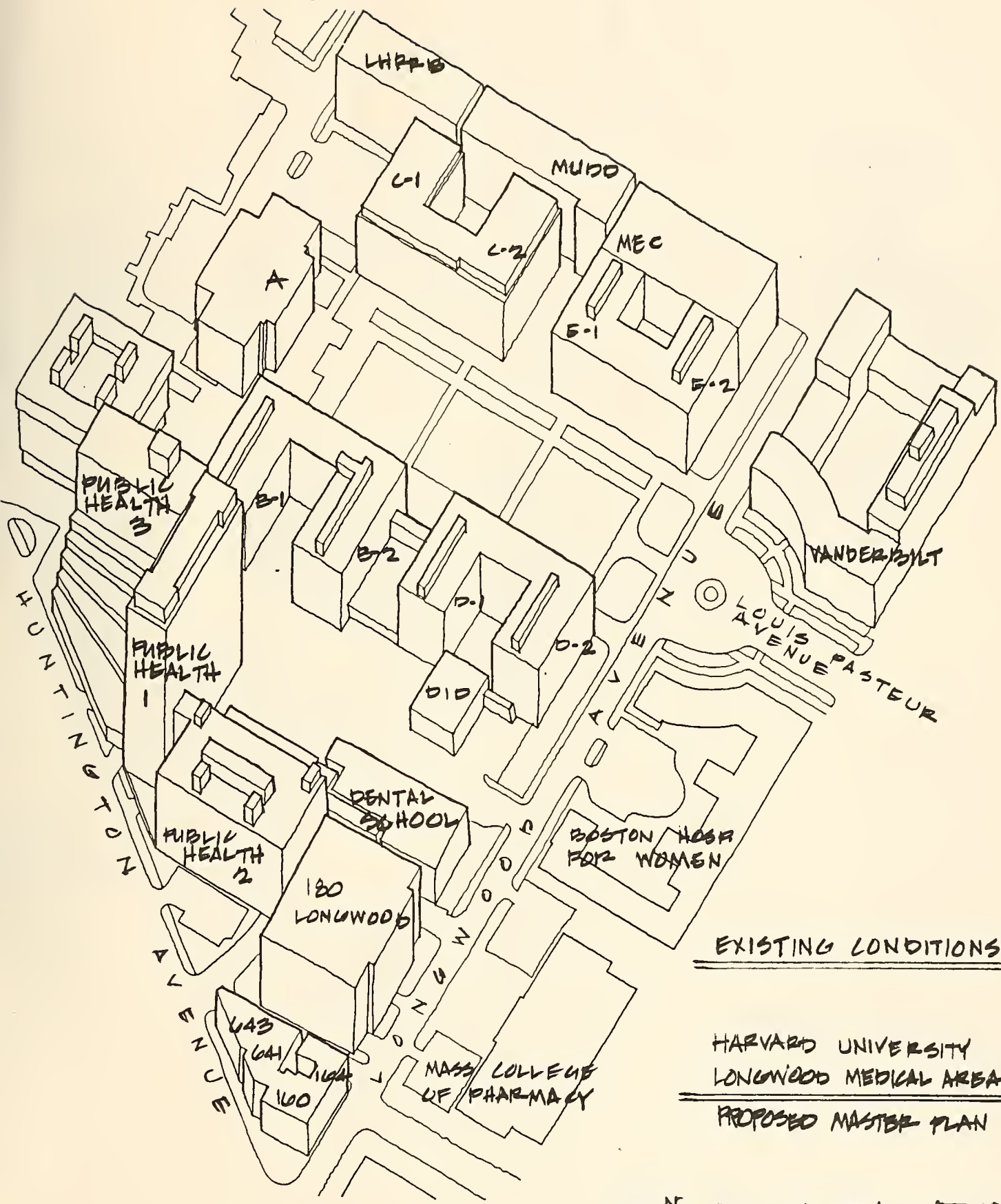
### Schedule

Construction is scheduled to start February, 1990 and to be completed in one year.

### Approvals

To obtain a building permit in February, review of this project will adhere to the East Quadrangle Research Facility schedule with a Zoning Board of Appeal public hearing in November following community, Boston Redevelopment Authority and Boston Transportation Department Review. A building permit application was submitted in early June.

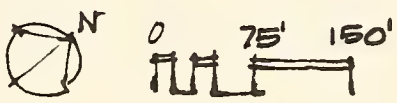




EXISTING CONDITIONS

HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA

PROPOSED MASTER PLAN

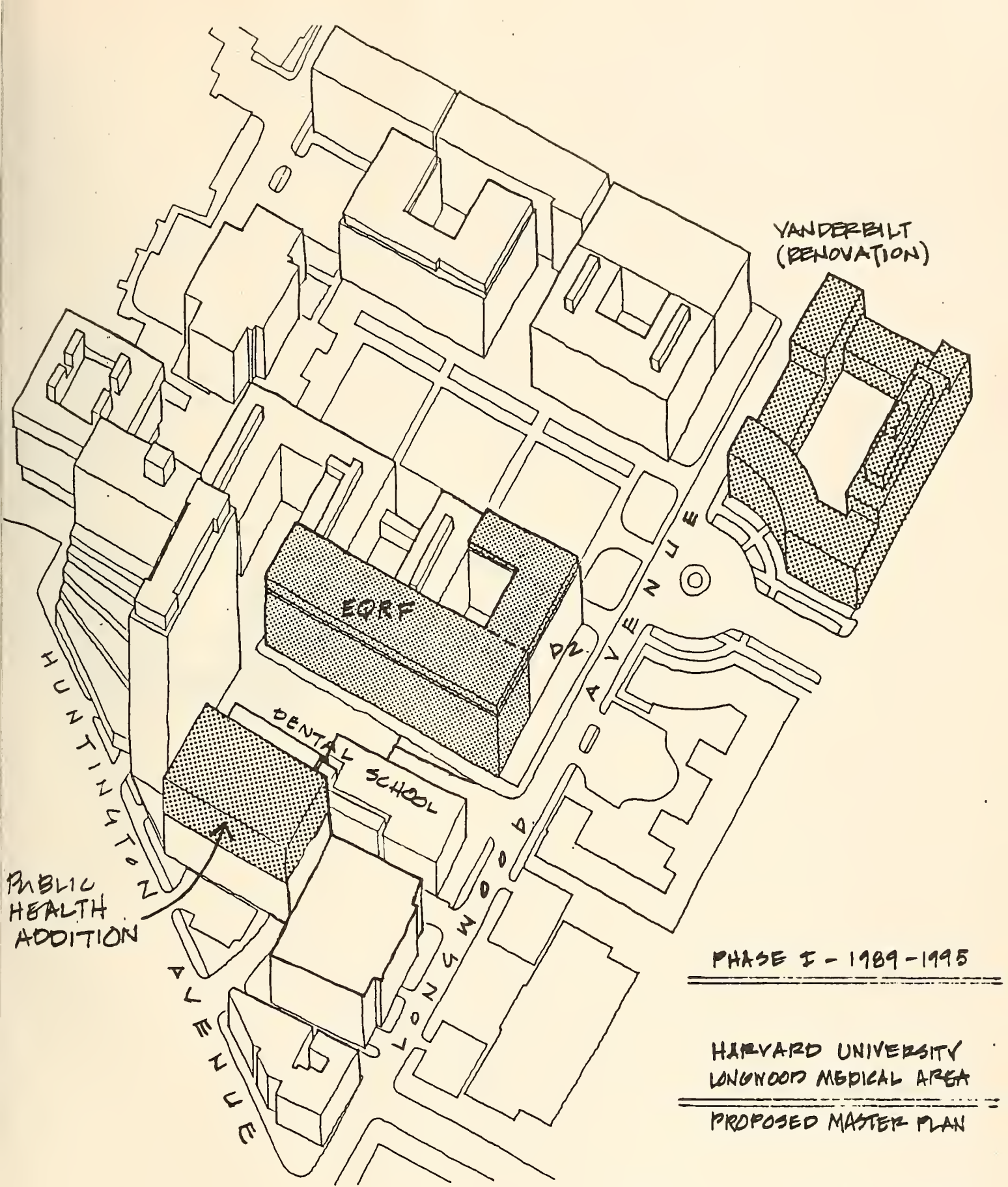


2

EXHIBIT







VANDERBILT  
(RENOVATION)

EGRF

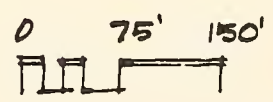
DENTAL  
SCHOOL

PUBLIC  
HEALTH  
ADDITION

PHASE I - 1989 - 1995

HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA

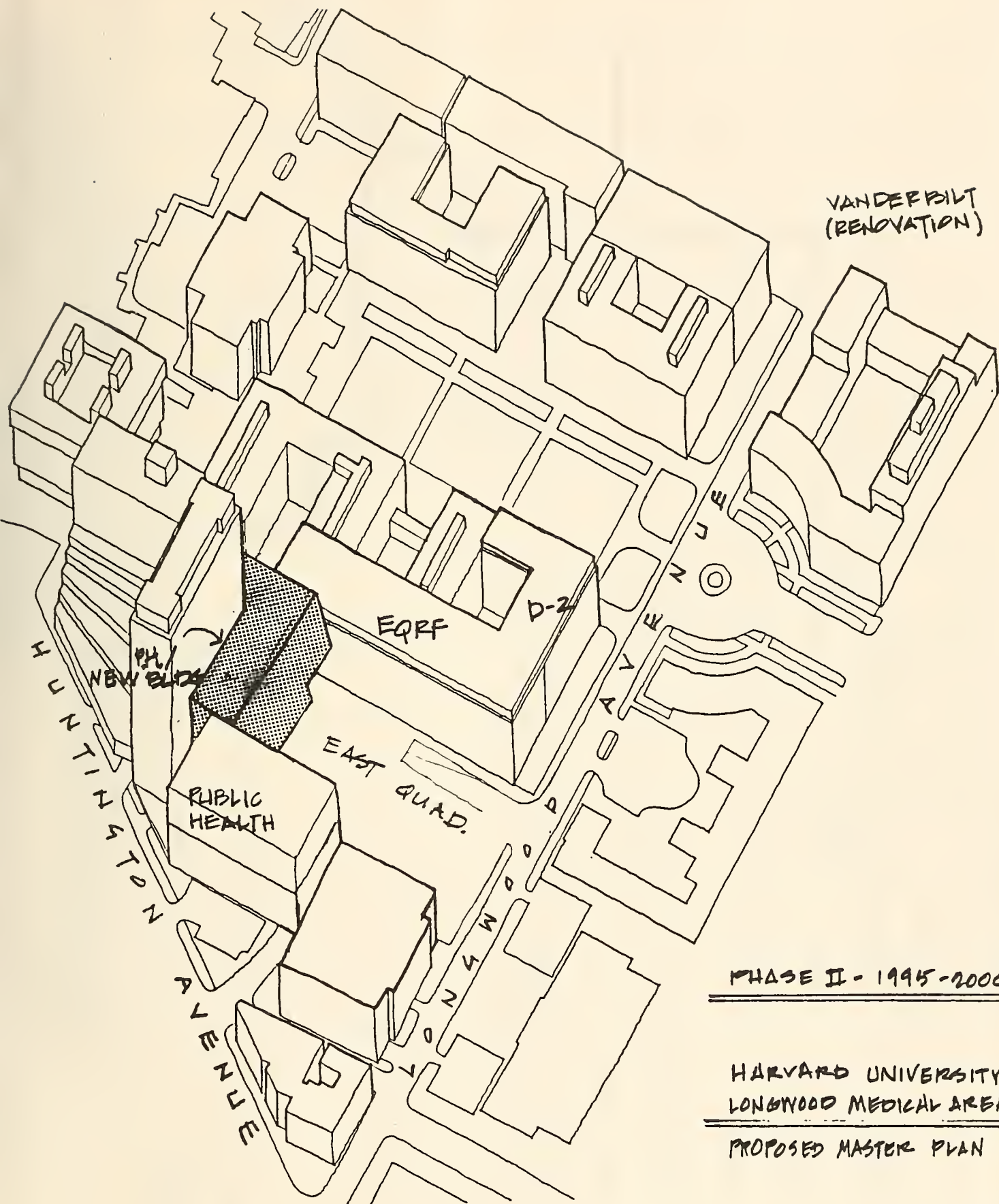
PROPOSED MASTER PLAN



4

EXHIBIT

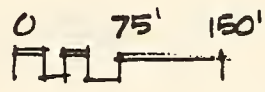




PHASE II - 1995-2000

HARVARD UNIVERSITY  
LONGWOOD MEDICAL AREA

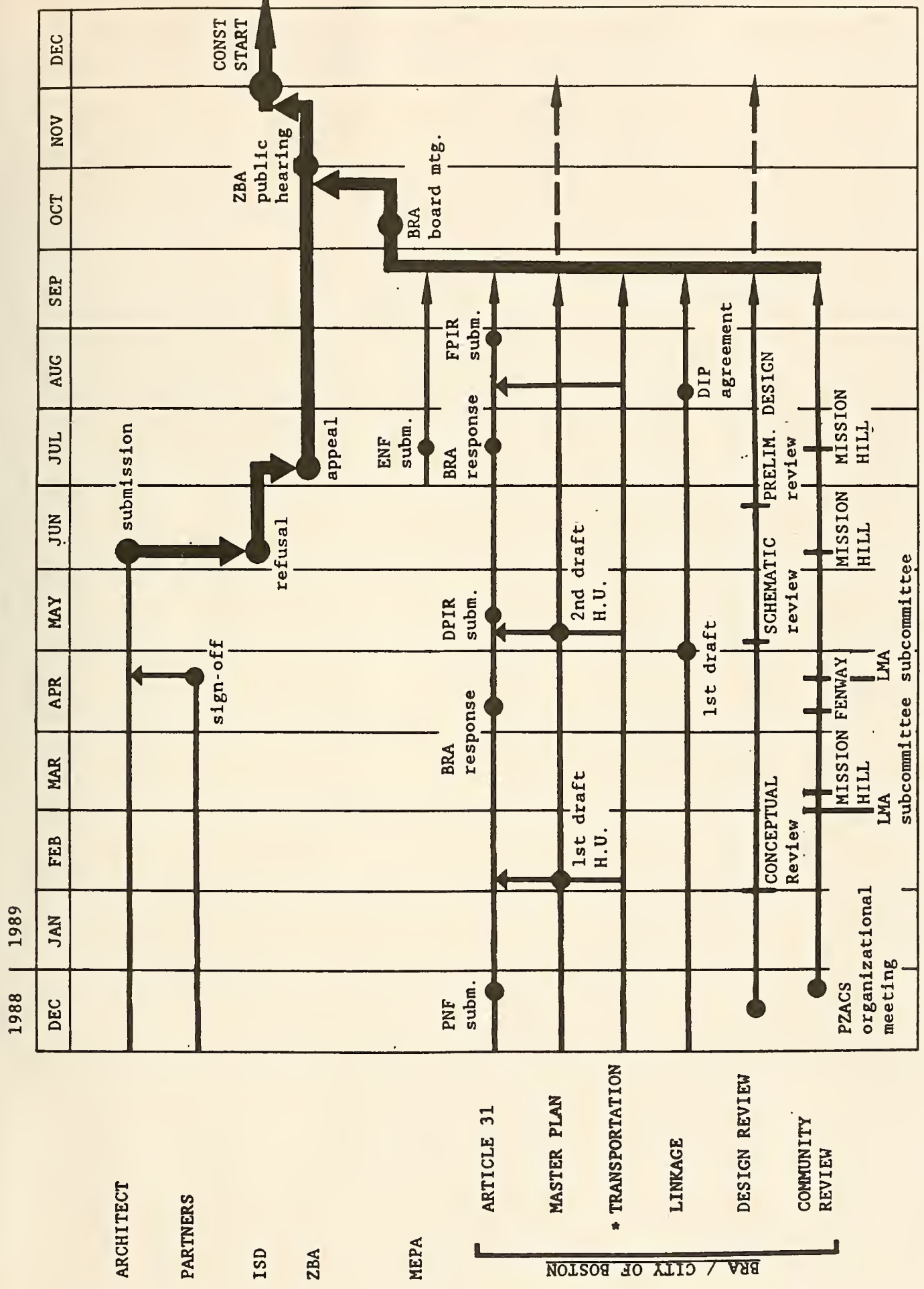
PROPOSED MASTER PLAN



EXHIBIT



FAKRUO MEDICAL SCHOOL  
 EAST QUAD RESEARCH FACILITY  
 Approval Process



\*Includes approval of interim parking plan by BRA and BTD  
 Rev. 6/20/89



















